Canada

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Canada-United States-Ontario-Michigan Border Transportation Partnership

Air Quality Impact Assessment

Technical and Environmentally Preferred Alternative

December 2008

PREFACE

The Detroit River International Crossing (DRIC) Environmental Assessment study was conducted by a partnership of the federal, state and provincial governments in Canada and the United States in accordance with the requirements of the Canadian Environmental Assessment Act (CEAA), the Ontario Environmental Assessment Act (OEAA), and the U.S. National Environmental Policy Act (NEPA). In 2005, the Canadian and U.S. Study Teams identified 15 potential river crossing locations and associated plaza and access road alternatives. The results of the assessment of these alternatives led to the identification of an Area of Continued Analysis (ACA). Within the ACA, practical alternatives were developed for the crossings, plazas and access road alternatives.

Through the analysis of the practical alternatives, and in conjunction with ongoing consultation efforts, a new alternative was developed that combined beneficial features of the original alternatives. The new alternative was identified as The Parkway in August 2007 and included 7 kilometres of below grade freeway, an optimized service road system, a green corridor with 10 tunnelled sections totalling 1.5 km in length, a grade separated recreational trail system, and extensive green areas.

Upon completion of the analysis of the practical alternatives, the alternatives were evaluated. The Partnership announced the results of the evaluation for the access road component in May 2008. Referred to as The Windsor-Essex Parkway, the Technically and Environmentally Preferred Alternative (TEPA) access road consisted of the major components of the Parkway with some refinements made to reflect additional community consultation and analysis. These refinements included an additional tunnel in the Spring Garden area, more green space and a refined trail network. The components of the TEPA for the international bridge crossing (Crossing X-10B) and Canadian plaza (Plaza B1) were announced in June 2008.

The remainder of 2008 focused on detailed analysis and identification of impacts and appropriate mitigation measures for the TEPA, along with further refinements. This report summarizes the work undertaken in this regard specific to Air Quality and the TEPA. These measures were also documented in a draft version of the Ontario Environmental Assessment Report, which was made available to the public, agencies, municipalities, First Nations, and other interested parties for review in November 2008. A separate Technical Memorandum (December 2008) documents further refinements that were made

Additional reports and details are available at the study website (www.partnershipborderstudy.com)

EXECUTIVE SUMMARY

This document provides an overview of the air quality impact analyses completed for the Technical and Environmentally Preferred Alternative (TEPA) as part of the Detroit River International Crossing (DRIC) Environmental Assessment.

The Area of Continued Analysis (ACA) was identified on the basis of an evaluation of illustrative crossing, Canadian plaza, and access road alternatives, which are summarized in the "*Draft Generation and Assessment of Illustrative Alternatives Report, November 2005*". Subsequent to the identification of the ACA, practical alternatives for the crossing, Canadian plaza, and access road were developed within the ACA and the impacts were assessed in the *Practical Alternatives Evaluation Working Paper, Air Quality Impact Assessment, May 2008*. The TEPA emerged from the evaluation of the practical alternatives.

The assessment of the TEPA follows the assessment protocol established in the *Air Quality Work Plan, February 2006*.

This assessment is a comparative assessment and considers the air quality impacts of existing conditions projected into the future (No Build) and of the TEPA.

Results of this assessment were used to support both the:

> *Human Health Risk Assessment (HHRA), Technically and Environmentally Preferred Alternative –, December 2008* which compares the relative risk of the TEPA to the future No Build, and the
>
> *Social Impact Assessment, Technically and Environmentally Preferred Alternative –, December 2008* which addresses the impacts of the TEPA on the community.

The findings documented in this report correspond to the TEPA, which was developed and presented to stakeholders in June 2008. The TEPA includes The Windsor-Essex Parkway, Plaza B1 and Crossing X-10B. Subsequent to the development of the TEPA, several refinements have been made. These refinements, along with an assessment of the associated impacts are documented in a technical memorandum which should be read in conjunction with this report for areas impacted by the refinements.

Assessing Air Quality Impacts

The Ontario Ministry of the Environment (MOE) as a component of the MOE standard setting process has developed a list of the Ambient Air Quality Criteria (AAQCs). The AAQCs are effect-based levels in air, with variable averaging time (e.g., 24-hour, 1 hour and 10 minutes) appropriate for the effect that it is intended to protect against. The AAQCs, which represent desirable levels in ambient air, are used for assessing general air quality and the potential for causing an adverse effect. The Standards Development Branch of the MOE publishes a set of guideline limits in *Ontario's Ambient Air Quality Criteria* [MOE, 2008]. These criteria are not enforceable and with certain contaminants such as acrolein, the AAQCs are set below ambient background concentrations.

Federal Air Quality Objectives encompass three levels of air quality objectives: maximum desirable level (MDL), maximum acceptable level (MAL) and maximum tolerable level (MTL). The MAL is intended to provide adequate protection against effects on soil, water, vegetation, materials, visibility, personal comfort, and well-being. The MAL is considered

to be a realistic objective. Table 2.3 in this report summarizes the applicable available criteria from the MOE and Environment Canada.

The existing air quality is greatly influenced by local and long range (cross-border) contaminants generated in upwind urban and industrial areas. The predominant wind directions in Windsor are from the west to southwest, which bring contaminants from the heavily industrialized areas of Detroit, nearby communities and beyond. Air quality impacts in the area are dominated by the substances that combine to produce smog or acid rain. A report by the Ministry of the Environment on Transboundary Air Pollution in Ontario (2005) indicates that for Windsor, eliminating all Ontario sources of emissions of $PM_{2.5}$ and NO_2 will have no impact on air quality during smog days due to the significant contribution from transboundary sources.

Air quality effects of the TEPA and No Build have been assessed using a combination of existing air monitoring data and air dispersion modelling. Air dispersion modelling must be used to assess the impacts of future changes, such as implementation of the alternatives, and changes in fuels, vehicle technologies and traffic volumes. The predictive air quality model (CAL3QHCR) used is specifically designed to assess impacts from roads and highways. The model incorporates the differences between moving vehicles, and queued vehicles that are idling, as well as differences in road elevations and other parameters.

Potential air quality effects from roadways decrease with increasing distance from the roadway. Therefore, the greatest effects will occur immediately adjacent to the roadway.

Assessment Methodology

The analysis was completed using the following approach:

- Compile data on contaminants listed in the Air Quality Work Plan
- Determine background concentrations
- Input traffic data for future conditions, including access road, plaza and crossing alternatives
- Calculate pollutant emissions from the highway corridor for existing and future conditions
- Use air dispersion model (CAL3QHCR) with meteorological data from Windsor Airport to determine future air pollutant concentrations in the vicinity of the corridor (essentially all of west Windsor) and at sensitive receptor locations (such as schools and residences).
- Compare pollution concentrations corresponding to future “Build (TEPA)” and future “No Build” conditions

Data on the existing air pollutant concentrations in the Windsor area was obtained from two MOE air monitoring stations located on College Avenue and on University Avenue.

Traffic projections were developed for the DRIC study for all main roads in the corridor for each year considered in the assessment, which were 2015, 2025 and 2035. This included the future “No Build” case (i.e. expected traffic volumes if no new access road/crossing is built), as well as for the TEPA.

Emission rates from these vehicles were input into the CalTrans CAL3QHCR roadway dispersion model, which is accepted for use in Ontario by the MOE and is supported by Environment Canada. Improvements in fuels and technologies legislated to occur over the

next several years and historical fleet turnover rates were considered in these emission rates. The model incorporated meteorological data from Windsor Airport, to determine predicted air pollutant concentrations at over 2400 receptor locations in West Windsor.

The uncertainties and inevitable variability associated with predicting future traffic flows, weather conditions and emission rates place some limitations on the accuracy of model results; however, the results are useful and acceptable for comparing between the No Build and the TEPA.

Predicted Air Quality Impacts

In general, the air quality assessment shows that potential impacts from The Windsor-Essex Parkway would be small relative to background concentrations and limited to areas in close proximity to the road. Overall, the implementation of The Windsor-Essex Parkway will improve future transportation related air quality impacts within the study area over the No Build alternative because it provides a wide right-of-way and improvements in traffic flow, by eliminating stop-and-go conditions caused by the traffic signals that exist in the Highway 3 / Huron Church Road corridor today. Chapter 4 of this report provides more details on results.

The study found that in comparing future conditions for both No Build to The Windsor-Essex Parkway, air quality will improve for gaseous pollutants due to newer engine technologies and fuels despite the predicted increase in traffic due to population growth, but could slightly deteriorate for particulate based compounds due to road dust arising from increased traffic flows.

The results of the study show that existing air quality in the study area is typical of an urban setting, which is characterized by elevated pollutant concentrations in relation to rural areas, with periodic compromised air quality due to particulate based contaminants, which typically occurs during smog events.

Overall, based on the results of the air dispersion modeling, the potential air quality impacts arising from either the No Build or the TEPA would be very minor and limited to the traffic corridors. In general terms, The Windsor-Essex Parkway will mitigate future transportation related air quality impacts within the study area for gaseous contaminants but may result in slightly elevated concentrations of PM within The Windsor-Essex Parkway corridor.

The results for the proposed crossing and plaza indicate that the maximum predicted concentrations of $PM_{2.5}$ and NOx are generally similar to those of The Windsor-Essex Parkway. Given the location of the crossing impacts to air quality for sensitive receptors are not predicted.

For the various modelling scenarios, the distribution of the traffic is different. In the No Build scenario, traffic is more widely distributed on the road network, and thus the No Build scenario would have air quality impacts in other areas of the City of Windsor outside of the Area of Continued Analysis.

The MOE publishes air quality conditions in different locations, including Windsor, in Ontario through their Air Quality Index (AQI). This information is available to the public on an hourly basis. The AQI is an indicator of air quality based on the highest pro-rated hourly pollutant measurements of six common air contaminants, of which NO_2 and $PM_{2.5}$ are considered. The range of concentration of the contaminants determines the Air Quality Index. When $PM_{2.5}$ is the driver for air quality, a change of about 6 $\mu g/m^3$ is

required to move the Index from one rating to another. For NO_2 the concentration difference required to move the Index from one rating to another is about 100 μg/m^3.

Air quality impacts generally follow expected trends based on the changes in vehicle emission factors and increases in traffic volumes over time. In summary, results of the modelling indicate that:

- the concentrations of the contaminants decrease as the distance from the roadway increases;
- with the exception of near the Plaza for PM2.5 and NOx 1 hr concentrations under maximum conditions, there are no differences in concentrations relating to the TEPA that would cause the AQI to be degraded;
- gaseous contaminants generally reduce over time although the reduction is partially off-set by the increase in traffic; and
- the PM concentrations increase with time, as traffic volumes are predicted to increase from 2015 through 2035.

While not specifically included in the analysis, traffic conditions along Huron Church beyond E.C. Row towards the Ambassador Bridge are expected to decrease by 20% with the TEPA. Congestion and traffic queuing should also decrease accordingly, thereby resulting in further air quality improvements.

Mitigation Measures

The construction of the TEPA has the potential to affect the air quality in the vicinity of the site during the construction phase. As with any construction site, these emissions will be of relatively short duration and are unlikely to have any long-lasting effect on the surrounding area. Dust impacts should be mitigated through the use of proper controls, such as:

- periodic watering of unpaved (non-vegetated) areas;
- periodic watering of stockpiles;
- limiting speed of vehicular travel;
- use of water sprays during the loading, unloading of materials;
- use of calcium oxide; and
- sweeping and/or water flushing of the entrances to the construction zones.

Road sweeping practices in accordance with maintenance standards will be employed to reduce silt loading on The Windsor-Essex Parkway.

These types of controls aid in minimizing impacts to the environment during the construction phase.

Air Quality Impact Assessment

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1.0 Introduction

Changes to Air Quality is one of the seven factors being used to assess the potential effects of the Technically and Environmentally Preferred Alternative (TEPA) currently being studied by the Detroit River International Crossing (DRIC) study team.

Due to the proximity to the Canada-U.S. border and the resulting high rate of traffic through the City of Windsor, vehicular emissions and their effect on existing air quality are of concern in the Windsor-Essex area. The City of Windsor also has a relatively high fraction of diesel powered transport trucks that are used to move goods into and out of Canada. Diesel exhaust is highly visible, and there is increasing evidence of health effects associated with it. Thus, a primary objective of the Air Quality Assessment is to have a transportation solution that not only improves transportation in the Windsor-Essex area, but also improves the overall air quality relative to existing conditions or "No Build" through reducing idling and congestion in the local area, if possible.

This report outlines the methodology and tools used to conduct the Air Quality Assessment and presents the results and evaluation of the TEPA. The methodology follows that outlined in the *Air Quality Work Plan* (*February 2006*) which was circulated to various authorities for review and comment and builds upon the work completed in the *Practical Alternatives Evaluation Working Paper, Air Quality Assessment (May 2008)*.

The focus of this report is to determine the relative impacts of the TEPA when compared to the No Build. The uncertainties and inevitable variability associated with predicting future traffic flows, weather conditions and emission rates place some limitations on the accuracy of model results; however, the results are useful and acceptable for comparing the TEPA to No Build as any uncertainties will be consistent between the two options.

This assessment identifies predicted changes in particulate and gaseous pollutant concentrations.

Results of this assessment were used to support both the:

Human Health Risk Assessment (HHRA), Technically and Environmentally Preferred Alternative –, December 2008 which compares the relative risk of the TEPA to the future No Build, and the

Social Impact Assessment, Technically and Environmentally Preferred Alternative –, December 2008 which addresses the impacts of the TEPA on the community.

1.1 Technically and Environmentally Preferred Alternative Under Assessment

The Area of Continued Analysis (ACA) is illustrated in Figure 1.1. It was identified on the basis of an evaluation of illustrative crossing, Canadian plaza, and access road alternatives, which are summarized in the *Draft Generation and Assessment of Illustrative Alternatives Report, November 2005*. Subsequent to the identification of the ACA, practical alternatives for the crossing, Canadian plaza, and access road were developed within the ACA. The TEPA emerged from the evaluation of the practical alternatives.

Following the Public Information Open House (PIOH) in December 2006, a Parkway alternative was developed for the access road based on the below-grade and tunnel alternatives (Alternatives 1B, 2B and 3) and reflecting the study goals and the community input received. With The Windsor-Essex Parkway, the access road for international traffic would generally be below-grade from Howard Avenue to E.C. Row Expressway, with a number of tunnels. The Right of Way (ROW) is also expanded in sections with The Windsor-Essex Parkway to provide additional buffer. Figure 1.2 illustrates The Windsor-Essex Parkway and the short tunnels.

FIGURE 1.1 - KEY PLAN OF THE AREA OF CONTINUED ANALYSIS

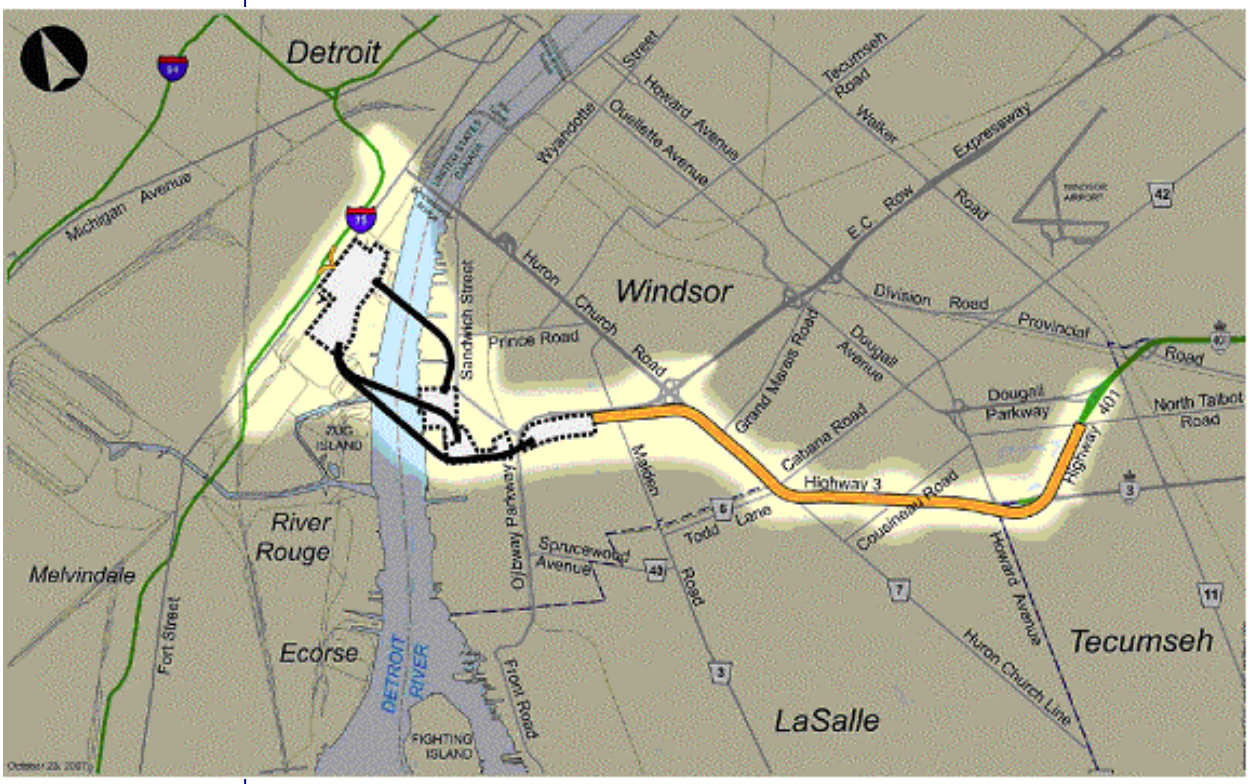


FIGURE 1.2 – THE WINDSOR-ESSEX PARKWAY TUNNEL CONFIGURATIONS

I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)
①	Spring Garden	200	9,000
②	Ramp N-E and Labelle Street	240	10,810
④	Grand Marais Road West	120	9,550
⑤	Pulford Street	120	9,705
⑥	Reddock St	120	15,320

I.D.	Location of Tunnel	Tunnel Length (M)	Roof Area (Sq M)
⑦	Cabana Road West	120	8,300
⑧	Huron Church Line	240	14,400
⑪	St. Clair College	120	7,225
⑫	Cousineau Road	120	7,225
⑬	Hearthwood Place	220	19,250
⑮	Oliver Estates Area	240	13,200

Structures 3 9 10 14 16 17 18 are proposed as roadway overpasses

Potential air quality effects of the TEPA were assessed in accordance with the *Air Quality Impact Assessment Work Plan* developed for the DRIC Study, using a combination of air monitoring data in combination with air dispersion modelling. Air dispersion modelling was used to assess the impacts of future changes, such as implementation of the alternatives and, in addition, changes in fuels, vehicle technologies and traffic volumes. The model choice for most of the alternatives is CAL3QHCR. CAL3QHCR is specifically designed to assess impacts from roads and highways. The model incorporates the differences between moving vehicles, and queued vehicles that are idling, as well as differences in roads that are at grade, below grade, and bridges.

1.2 Area of Investigation

Since air quality is not limited by local political boundaries, a relatively broad area was included in the Air Quality Assessment. This comprised an approximate 10 km x 10 km area in West Windsor, from just south of the present Highway 401 terminus at Highway 3, 10 km north and 10 km west to the Detroit River. This is approximately the area depicted in Figure 1.1 that was presented earlier.

Potential air quality effects from roadways decrease with increasing distance from the roadway. Therefore, the greatest effects will occur adjacent to the roadway.

2.0 Existing Environmental Conditions

Assessment of the existing environmental conditions in the Windsor area is an important first step in the analysis of the various alternatives being studied. The existing conditions represent the benchmark to which future changes must be added (such as future traffic growth without implementation of any project related Alternatives). The benchmark and future changes form the baseline conditions, and are also known as the No Build Alternatives (one for each horizon year). All future changes related to the project are added to the existing conditions and evaluated against the baseline condition.

2.1 Climate and Meteorological Data

Characterization of the existing climate and meteorological conditions in the vicinity of the Huron Church Road / Highway 3 corridor is important because these are the main forces driving contaminant transport (dispersion) in the atmosphere. The direction and speed of the wind dictates the location and distance from the source that the pollutants may travel. The factors that influence the contaminant mixing in the atmosphere are described below.

The Windsor-Essex area has a middle latitude, humid continental climate affected by Lake Erie and Lake St. Clair. The region is characterized by pronounced seasonal differences of weather and by a highly variable day-to-day weather pattern. Some periods in summer are essentially classified as humid tropical (high temperatures, high humidity, afternoon thunderstorms, etc.). Some periods in winter are effectively classified as polar (very cold, clear, dry). Precipitation occurs throughout the year.

The surface meteorological data used in the air dispersion modelling was obtained from the Windsor Airport meteorological station (2000 – 2004) which is approximately 5 – 7 km east of the Huron Church Road / Highway 3 corridor. It is well exposed and represents the general wind flow pattern in the vicinity of the corridor since the area is generally flat. The upper air measurements used are from the closest upper air station in Pontiac, Michigan, which is located approximately 30 km northwest of the DRIC study area. In order to be considered representative, the wind and temperature data should be obtained from within 100 km of the study area, and the upper air data (which is a regional parameter) should be within 300 km. The stations used for this study are well within these parameters.

2.1.1 Near-Surface Temperature

Temperature and precipitation normals for the Windsor Airport (1971 - 2000) are presented in Table 2.1. "Normals" is the term commonly used for values of climatic elements averaged over a fixed standard period of years (usually 30 years).

Temperature near the surface of the earth controls the buoyant component of turbulence (vertical motion). Heat from the earth's surface heats the air near the ground causing the temperature to rise. This mechanism reaches a maximum in early afternoon and is at a minimum near sunrise. This affects the dispersion of air pollutants through the influence of "thermal mixing" as the air mass rises.

Table 2.1 indicates that the minimum mean (averaged over 30 years) daily temperature is –8.1°C in January and maximum mean daily temperature is 28°C in July at the Windsor Airport site. The annual mean temperature is 9.4°C.

TABLE 2.1 - WINDSOR AIRPORT CLIMATE NORMALS (1971-2000)

Temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average (°C)	-4.5	-3.2	2	8.2	14.9	20	23	21.6	17	11	4.6	-1.5	9.4
Standard Deviation	2.9	2.7	2.1	1.6	2.1	1.3	1.1	1.2	1.3	1.7	1.7	2.7	0.8
Daily Maximum (°C)	-0.9	0.6	6.4	13	20.5	25	28	26.6	23	16	8.3	1.9	14
Daily Minimum (°C)	-8.1	-7	-2.4	3	9.3	15	17	16.6	12	6.2	0.9	-4.8	4.9
Precipitation													
Rainfall (mm)	29	33	55.6	81	80.7	90	82	79.7	96	64	67	47	805.2
Snowfall (cm)	35	28	20.6	4.3	0	0	0	0	0	0.7	8.3	30	126.6
Precipitation (mm)	58	57	75	85	80.8	90	82	79.7	96	65	76	75	918.3
Days with Rainfall													
>= 0.2 mm	5.7	5.6	9.4	12	11.8	11	10	10	11	11	11	7.9	115.7
Days With Snowfall													
>= 0.2 cm	13	9.1	6.7	2.3	0.03	0	0	0	0	0.3	3.8	10	45
Days with Precipitation													
>= 0.2 mm	15	12	19.9	19	11.8	11	10	10	11	11	15	15	146.7
Wind													
Days with Winds >= 52 km/hr	1.9	1.4	2.5	1.8	1.1	0.9	0.7	0.3	0.4	0.5	1.2	1.2	14
Days with Winds >= 63 km/hr	0.6	0.4	0.7	0.7	0.5	0.3	0.4	0.2	0.1	0.2	0.3	0.3	4.7

Source: Environment Canada website, http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html

The meteorological file used in the air dispersion modeling for this project requires hourly temperatures for each day in the year.

2.1.2 Precipitation

Precipitation acts as an atmospheric cleansing mechanism, as contaminants in the air are generally washed out by precipitation. More precipitation produces more washout. For this study, the role of precipitation in the removal of pollutants from the air was not considered, thereby generally providing conservatively high ground level concentrations.

As shown in Table 2.1 above, the Windsor area normally receives a total of 918.3 mm of precipitation per year, including 805.2 mm of rainfall and 126.6 cm of snowfall. The maximum mean monthly rainfall is 96.2 mm, which occurs in September.

2.1.3 Atmospheric Stability

Normally, temperature decreases with increasing height above the earth's surface. The relationship of the actual vertical temperature to the near-surface temperature determines the atmosphere's ability to resist or enhance vertical motion. The amount of vertical motion is a measure of the stability of the atmosphere.

The atmosphere can have three general stability states - unstable, neutral and stable. The stability scale normally used for air quality simulations varies from very unstable (A) through neutral (D) to very stable (F). The stability class distribution for the Windsor Airport station for the period 2000 - 2004 is presented in Table 2.2. At this station, neutral stability conditions {D (neutral) + C (near neutral)} occur approximately 67% of the time and stable conditions (E, F) about 28% of the time. Stable conditions can produce higher concentrations of contaminants because of reduced turbulent mixing.

TABLE 2.2 - STABILITY CLASS DISTRIBUTION - WINDSOR AIRPORT (2000-2004)

Stability Class	% Frequency						Descriptor
	2000-2004	2000	2001	2002	2003	2004	
A	0.5	0.4	0.8	0.6	0.4	0.4	Unstable
B	4.2	3.6	4.6	4.4	4.4	3.9	
C	10.1	10.6	10.3	9.8	9.9	9.9	Neutral
D	57.0	56.0	56.2	57.1	57.0	58.6	
E	13.3	13.6	14.0	13.2	12.8	13.1	Stable
F	14.9	15.8	14.2	15.0	15.5	14.1	

The meteorological file used in the air dispersion modeling for this project requires hourly meteorological data, which includes atmospheric stability, for each day in the year.

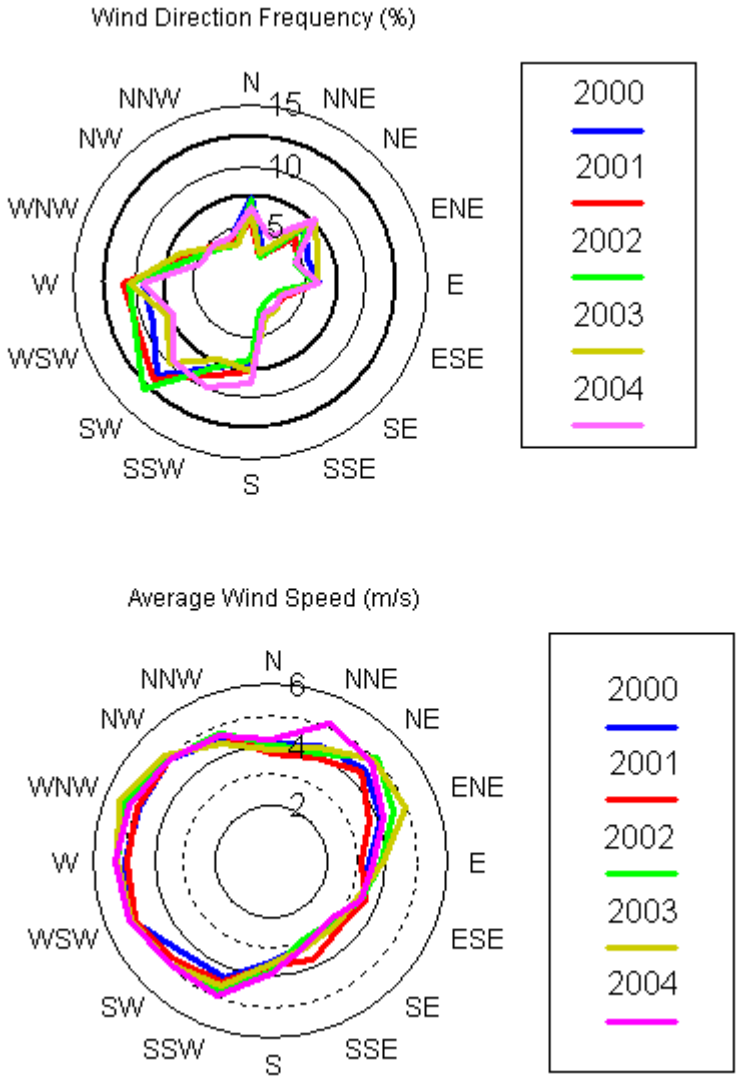
2.1.4 Wind Direction

Wind direction is reported as the direction from which the wind blows and is based on surface (10 meter) observations. In general terms, if the wind does not blow from an emission source toward a receptor, there will be no impact from the emission source at that receptor. The wind blows in all directions with varying frequencies. Certain directions occur more frequently than others. These are known as the prevailing wind directions.

Figure 2.1 presents a wind rose for the Windsor Airport for the years 2000 - 2004. The prevailing wind is from the southwest, primarily during the summer months, with winds blowing from the west through southwest directions (i.e., from Southeast Michigan) approximately 32% of the time.

The dispersion modelling for this study uses the hourly wind directions of each day in the year.

FIGURE 2.1 - WIND ROSE - WINDSOR AIRPORT (2000 - 2004)



2.1.5 Wind Speed

Contaminant concentrations decrease with increasing wind speed as a result of atmospheric mixing. The wind speed used in the air quality modelling is based on surface observations from the Windsor Airport. Wind speed increases with height as surface friction is reduced. Variation of wind speed with height is built into the dispersion model used in this assessment. When wind speeds are high, there is good dispersion of gases and particles, but more potential for re-suspension of surface dust. When wind speeds are near zero, the primary mechanism of pollutant transport away from a source is via diffusion, which can lead to very high pollutant concentrations near the ground. Calms occur about 4% of the time and for example, were recorded 4.3% of the time at the

Windsor Airport meteorological station (Figure 2.1) during 2003 and 3.6% for the 2000 – 2004 period.

The meteorological file used in the air dispersion modeling for this project requires hourly wind speed and directions for each day of the reference meteorological data-base..

2.1.6 Mixing Height

Another very important parameter in the dispersion of contaminants from a source is the "mixing height". This is the vertical extent through which the plume can be mixed. With a higher mixing height there is a larger volume of air available within which the pollutants can mix which results in lower concentrations. With a lower mixing height, the plume may become trapped resulting in higher concentrations.

The concept of mixing height is founded on the principle that heat transferred to the atmosphere near the earth's surface results in convection, vigorous vertical mixing and the establishment of a dry-adiabatic lapse rate [Holzworth 1967]. For annual and 24-hour average concentrations, the mixing height does not typically have much of an effect on the modelled ground level concentrations [Young and Radonjic 1993]. For 1-hour average concentrations, however, mixing height is very important. The use of variable mixing heights that are as close to the actual conditions as possible improves the ability of the model to accurately predict downwind concentrations. For the sources that are close to the ground, the mixing heights do not play a major role.

The closest station having the upper air data necessary for this study is located in Pontiac, Michigan. The mixing height data for each day in the 5-year meteorological period (2000 - 2004) was developed using the Holzworth [1967] methodology. The surface values and the mean monthly minimum (morning) and maximum (afternoon) mixing heights were then pre-processed through the U.S. EPA meteorological pre-processor (PCRAMMET) [U.S. EPA 1998] which combines surface and upper air measurements to create the hourly mixing heights which are required by the dispersion model. Missing data was filled in by interpolation. There were no significant blocks of data missing from this meteorological data set.

2.2 Assessment Criteria

Environment Canada and the MOE have set air quality objectives, and air quality standards and criteria, respectively for various air pollutants.

The Ontario MOE as a component of the MOE standard setting process has developed a list of the Ambient Air Quality Criteria (AAQCs). The AAQCs are effect-based levels in air, with variable averaging time (e.g., 24-hour, 1-hour and 10 minutes) appropriate for the effect that it is intended to protect against. The AAQCs, which represent desirable levels in ambient air, are used for assessing general air quality and the potential for causing an adverse effect. The Standards Development Branch of the MOE publishes a set of guideline limits in *Ontario's Ambient Air Quality Criteria* [MOE 2008]. These criteria are not enforceable and with certain contaminants such as acrolein, the AAQCs are set below ambient background concentrations.

Federal Air Quality Objectives encompass three levels of air quality objectives: maximum desirable level (MDL), maximum acceptable level (MAL) and maximum tolerable level (MTL). The MAL is intended to provide adequate protection against effects on soil, water, vegetation, materials, visibility, personal comfort and well-being. The MAL is considered to be a realistic objective. Table 2.3 summarizes the applicable available criteria from the MOE and Environment Canada.

Emissions of nitrogen oxides (NO_x) and $PM_{2.5}$ from the vehicles traveling on the freeway and the local service roads, other local arterial roadways, local industry and transboundary pollution from the south eastern United States have the greatest potential to impact local air quality. NO_x is the sum of nitrogen dioxide (NO_2) plus nitric oxide (NO). At present, there is no provincial annual AAQC for NO_x, but there is a federal MAL for NO_2. The assessment was conservatively completed assuming that 100% of the NO_x is NO_2. Typically, NO_2 comprises only a small fraction of total NO_x .from tailpipes and time is required to convert the NO emissions to NO_2. In other words, even for low wind speeds, there will be further dilution of NO and resultant NO_2 via atmospheric processes during the time required to convert the NO emissions to NO_2.

The ambient Particulate Matter (PM) standards and criteria were set to prevent a reduction in visibility. Particles suspended in the atmosphere reduce visibility or the visual range by reducing the contrast between an object being viewed and its background. This reduction is a result of particles scattering or absorbing light coming from both the object and its background, and from particles scattering light into the line of sight [Robinson 1977]. Particles with a radius of 0.1 to 1.0 μm are most effective at reducing visibility. In a rural area where PM levels are on the order of 30 $\mu g/m^3$, the visibility would be about 40 km. At 150 $\mu g/m^3$, a common urban concentration, the range would be reduced to about 8 km. The MOE 24-hour criterion of 120 $\mu g/m^3$ is based on a visual range of about 10 km.

Today, less emphasis is being placed on PM as an indicator of the health impacts of air quality. Impacts from elevated PM concentrations are extremely localized and generally are nuisance based, rather than health based. Consequently more emphasis is being placed on the finer particulate fractions, namely PM_{10} and $PM_{2.5}$.

Many studies over the past few years have indicated that fine particulate matter (PM_{10} and $PM_{2.5}$) in the air is associated with various adverse health effects in people who already have compromised respiratory systems and suffer from asthma, chronic pneumonia and cardiovascular problems. However, the available studies have not been able to link the adverse health effects in such people to any one component of the pollution mix. Fine particulate matter is a mixture of chemically and physically diverse dusts and droplets, and some of these components may be important in determining the effects of PM_{10} and $PM_{2.5}$ on health.

NO_2 is the primary component of concern in NO_x. NO_2 is a reddish brown gas with a pungent odour, which upon reaction with other atmospheric compounds, becomes a major contributor to smog, acid rain, inhalable particulates and reduced visibility. NO_2 also plays a major role in atmospheric reactions that produce ground level ozone. Man-made sources of NO_x include all fossil fuel combustion such as heating buildings, commercial and industrial operations, etc. While, motor vehicle exhaust is a significant source of NO_x only a small percentage is emitted as NO_2 directly from the tailpipe [X. Yao et al, 2005]. The main component of NO_x from tailpipes is NO which reacts in the atmosphere over time

and distance to form NO_2. The rate of reaction is influenced by many factors including initial concentration, sunlight, ozone concentrations and others.

Carbon monoxide (CO) is a colourless, odourless, poisonous gas that is produced as a result of incomplete oxidation of carbon during combustion. Motor vehicle exhaust is the primary source of CO in Canada, accounting for approximately 40% of all CO emissions. According to the MOE [1999], in Ontario, over 60% of the CO produced is from the transportation sector. The remainder is the result of other sources of fossil fuel combustion such as heating buildings, commercial and industrial operations, etc.

Volatile Organic Compounds (VOCs) are defined technically as organic compounds having a saturation vapour pressure greater than 0.1 mm of mercury at 25°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. Almost all VOCs contribute to ground-level ozone, and most do not break down in the troposphere under photochemical reactions.

VOCs are emitted into the atmosphere from a variety of anthropogenic sources, including vehicles, fossil fuel combustion, steel-making, petroleum refining, fuel refilling, industrial and residential solvent use, paint application, manufacturing of synthetic materials (e.g. plastics, carpets), food processing, agricultural activities and wood processing and burning.

For the purpose of this report, primary VOC constituents of tail-pipe emissions from vehicles such as benzene, formaldehyde, acetaldehyde, acrolein, and 1,3 butadiene are also considered. While transportation sources are not the dominant contributor of the above VOCs to the ambient air (as they are each used widely in industry), they are considered to be characteristic compounds in vehicle exhaust. Benzene is present in the exhaust of gasoline-powered vehicles, as well as diesel-powered vehicles to a lesser extent. Acrolein, formaldehyde, and acetaldehyde are typically associated with diesel-powered heavy trucks (more so than gasoline-powered vehicles), and are believed to be primarily responsible for the characteristic odour of diesel exhaust.

Carbon dioxide (CO_2) is a greenhouse gas and is typically considered in terms of overall impact to global warming. Modelling was not conducted for CO_2, and instead the contribution to global warming was considered on an annual basis.

Emission factors for Polycyclic Aromatic Hydrocarbons (PAHs) do not exist, and as such PAHs as a composite were not assessed. The U.S. EPA document *"Revised Methodology and Emission Factors for Estimating Mobile Source PAH Emissions in the National Toxics Inventory"* suggests that PAHs are a function of total PM emissions. As a result, emission factors may be estimated using either $PM_{2.5}$ or PM_{10} concentrations, depending on vehicle type. For example, the fraction of PM_{10} which is naphthalene, is approximately 9% for Light Duty Gasoline Vehicles.

Moreover, the U. S. EPA emission factor values suggest that naphthalene makes up the largest fraction of PAH compounds for all vehicle types. Other sources also suggest naphthalene is the most abundant PAH found in gasoline fuels. For example, a study by Mi *et a*l. [1996] showed that for two gasoline types, naphthalene constituted approximately 98% and 76% of the total liquid PAH. As a result, naphthalene was chosen as a surrogate for PAHs.

There are no federal or provincial criteria for PAHs. An AAQC exists for naphthalene and is included in the table below as a surrogate for PAHs.

TABLE 2.3 - AIR QUALITY CRITERIA FOR ASSESSED CONTAMINANTS

Contaminant	Averaging Time	MOE AAQC µg/m³ (ppb)	Federal AQ Objective or Maximum Acceptable Level (MAL) (µg/m³)
NO_x (as NO_2)	1 h	400 (200)	400
	24 h	200 (100)	200
	Annual	-	100[1]
$PM_{2.5}$	24 h	30	30 *
PM_{10}	24 h	50 (interim)	-
PM	24 h	120	120
	Annual	60	70
Acrolein	24 h	0.08	-
	½ hr	0.24	-
SO_2	1 hr	690	900
	24 hr	275	310
	Annual	55	62
Carbon Monoxide (CO)	1 hr	36,200	36,200
	8 hr	15,700	15,700
Carbon Dioxide (CO_2)[2]	-	-	-
VOC	-	-	-
1,3 Butadiene	-	-	-
Benzene	-	-	-
Acetaldehyde	½ hr	500	-
	24 hr	500	-
PAHs[3]	24 hr-	22.5	-
Formaldehyde	24 hr	65	-

Notes
NO_x – nitrogen oxides – sum of nitrogen dioxide (NO_2) and nitric oxide (NO)
$PM_{2.5}$ includes all particulate matter with an aerodynamic diameter less than 2.5 µm – considered respirable
1 MAL is for NO_2
- Indicates no criterion available
* Comes into force in 2010
2 – CO_2 not modelled, annual emissions calculated, contaminant listed here as reference
3 – Surrogate of naphthalene used

2.3 Existing Air Pollutant Concentrations

The Ontario MOE measures air contaminants at various locations throughout Ontario, and reports on the state of Ontario's air quality on an annual basis. These reports are known as "Air Quality in Ontario" reports.

The existing air quality is greatly influenced by local and long range (cross-border) contaminants generated in upwind urban and industrial areas. The predominant wind directions in Windsor are from the west to southwest which bring contaminants from the heavily industrialized areas of Detroit, nearby communities and beyond. Air quality impacts in the area are dominated by the substances that combine to produce smog or acid rain. A report by the MOE on Transboundary Air Pollution in Ontario [2005] indicates that for Windsor, eliminating all Ontario sources of emissions of $PM_{2.5}$ and NO_2 will have no impact on air quality during smog days due to the significant contribution from transboundary sources.

Figure 2.2 from the MOE's 2005 report indicates the magnitude and distribution of $PM_{2.5}$ sources. As shown in the figure, transportation sources (green) make up only a small percentage of the area (blue) and point (red) sources. Neighbouring states release more than 25 times that of Ontario.

FIGURE 2.2 - $PM_{2.5}$ EMISSIONS BY SOURCE AT SELECTED STATES AND PROVINCES FROM U.S. 1999 AND CANADA 2000 EMISSIONS INVENTORIES (MOE 2005)

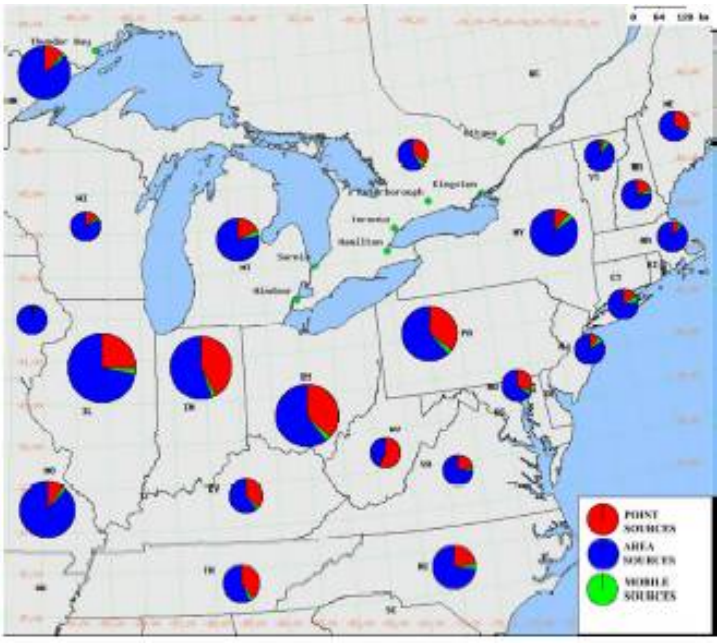


Table 2.4 presents a comparison of the major contaminants from roads and their relative contribution to the airshed in Ontario. Cells highlighted in yellow indicate sources attributable to transportation. As shown in Table 2.4, road dust contributes the most significant portion of PM, PM_{10} and $PM_{2.5}$ from transportation sources. While this data is not specific to Windsor, it is indicative of the general Ontario air quality and the larger contributors.

TABLE 2.4 - ONTARIO POLLUTANT EMISSIONS

from: http://www.ec.gc.ca/pdb/cac/Emissions1990-2015/emissions_e.cfm

Environnement Canada Environment Canada

2006 Air Pollutant Emissions for Ontario

Version 2, April 8th, 2008 — Emissions in Tonnes

SECTORS	TPM	PM10	PM2.5	SOx	NOx	VOC	CO
TOTAL INDUSTRIAL SOURCES	132,018	42,186	23,762	343,829	86,275	59,435	180,857
TOTAL STATIONARY FUEL COMBUSTION AND POWER GENERATION	36,879	30,645	27,866	99,123	69,788	39,812	184,690
Mobile Sources							
Air Transportation	300	300	293	1,641	23,838	3,608	17,410
Heavy-duty diesel vehicles	1,450	1,450	1,339	908	66,919	2,473	13,516
Heavy-duty gasoline trucks	62	61	52	14	3,853	902	14,036
Light-duty diesel trucks	81	81	74	44	857	371	676
Light-duty diesel vehicles	43	43	40	17	325	112	515
Light-duty gasoline trucks	187	181	158	246	30,453	23,971	504,280
Light-duty gasoline vehicles	192	186	172	239	30,072	29,714	561,629
Marine Transportation	1,328	1,276	1,174	10,241	14,146	475	1,204
Motorcycles	6	6	4	1	401	1,267	5,027
Off-road use of diesel	9,293	9,293	9,014	5,011	100,854	10,297	50,541
Off-road use of gasoline/LPG/CNG	3,089	3,089	2,846	37	15,185	91,977	903,167
Rail Transportation	1,330	1,330	1,224	1,729	36,964	976	5,329
Tire wear & Brake Lining	1,790	1,769	620				
TOTAL MOBILE SOURCES	19,151	19,066	17,010	20,127	323,867	166,143	2,077,329
TOTAL INCINERATION	30	2	2	825	62	171	1,054
TOTAL MISCELLANEOUS	3,283	3,282	3,274	0	37	169,292	1,299
Open Sources							
Agriculture	213,631	110,871	6,738	0	0	41,251	0
Construction Operations	463,168	137,592	27,003	357	890	12	153
Dust from Paved Roads	1,025,549	196,564	47,004				
Dust from Unpaved Roads	1,728,648	570,355	83,897				
Waste	1,744	693	492	103	2,326	4,624	3,070
Mine Tailings	4,318	345	86				
Prescribed Burning	552	514	457	21	145	673	3,722
TOTAL OPEN SOURCES	3,437,610	1,016,934	165,677	480	3,362	46,561	6,945
TOTAL NATURAL SOURCES (VEGETATION AND FOREST FIRES)	21,987	18,689	15,391	13	20,317	4,297,337	181,066
GRAND TOTAL	3,650,957	1,130,803	252,982	464,396	503,708	4,778,751	2,633,239
Pct of total from transportation	28%	18%	20%	0.3%	26%	1%	42%

2.3.1 Ambient Monitoring Data

The MOE has historically operated a number of ambient air monitoring stations in Windsor. However, in recent years the number of fully operational stations has been reduced to two. These stations are located at:

1) 467 University Ave. (Station #060204C) (Windsor Downtown);

2) College / South St. (Station #060211R) (Windsor West);

The locations of these monitoring stations in relation to the DRIC Area of Continued Analysis are presented in Figure 2.3.

To assess the existing air pollutant concentrations in the area, monitoring data from these two stations were obtained from the MOE [MOE 2001 - 2006]. The MOE AAQCs are based on Nitrogen Dioxide (NO_2) measurements rather than total NO_x, thus the NO_2 data has been presented. Data from the National Air Pollution Surveillance (NAPS) Network, established in 1969 as a joint program of the federal and provincial governments to monitor and assess the quality of the ambient air in Canadian urban centres, is also available for additional contaminants such as acetaldehyde and benzene. In Windsor, the NAPS station is co-located at the College/South Street (Windsor West) monitoring station.

Tables 2.5 through 2.13 present a summary of the measurements for contaminants measured at the MOE and NAPs stations. As can be seen in the tables, there are no exceedances of the criteria for most of the contaminants. $PM_{2.5}$ 24-hour exceedances occur on average between 7-10 times per year at the monitoring stations. If a table shows results for only one monitoring station the data comes from the NAPS network.

TABLE 2.5 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – NO_2

Station ID	Station Location	Averaging Period	Nitrogen Dioxide (µg/m³)							
			AAQC	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	Average	-	39	37	INS+	33	32	31	34
		1 hr 90th Percentile	-	66	62	69	62	62	58	63
		24 hr 90th percentile		58	56	62	54	53	45	55
		1-Hour Maximum	400	130	175	182	176	133	160	159
		24-Hour Maximum	200	83	116	92	79	109	82	94
#060204-C	467 University Ave.	Average	-	36	36	INS	34	32	34	34
		1 hr 90th Percentile	-	62	60	73	68	62	62	65
		24 hr 90th Percentile	-	57	53	67	62	53	51	57
		1-Hour Maximum	400	163	130	150	182	124	142	149
		24-Hour Maximum	200	77	86	94	90	100	88	89

+ INS = Insufficient data available to compute a representative average

TABLE 2.6 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – $PM_{2.5}$

Station ID	Station Location	Averaging Period	$PM_{2.5}$ (µg/m³)							
			AAQC	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	Average	-	-	11.8	9.6	9.5	10.5	9.2	10.1
		1-Hour Maximum	-	-	74	64	56	74	52	64.0
		24-hr 90th Percentile	-	-	26	20	21	24	19	22.0
		24-Hour Maximum	30**	-	56	41	38	52	39	45.2
		No. of Times above Benchmark	-	-	18	7	9	9	4	9.4
#060204-C	467 University Ave.	Average	-	9.4	9.8	8.5	8.6	10.4	8.2	9.2
		1-Hour Maximum	-	72	75	64	54	72	53	65.0
		24 hr 90th Percentile	-	20	21	19	19	24	18	20.2
		24-Hour Maximum	30**	40	56	43	39	48	37	43.8
		No. of Times above Benchmark (30 µg/m³)	-	7	10	5	8	12	2	7.3

** Canada Wide Standard, NOT AAQC

TABLE 2.7 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – SO_2

Station ID	Station Location	Averaging Period	Sulphur Dioxide (µg/m³)							
			AAQC	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	Average	-	17	22	ins	13	14	13	16
		1-Hour Maximum	690	226	349	270	198	270	264	263
		24-Hour 90th Percentile	-	41	52	39	33	39	33	39
		24-Hour Maximum	275	58	127	113	55	61	77	82
		Annual Mean	55	17	22	ins	13	14	13	
#060204-C	467 University Ave.	Average	-	17	13	16	13	13	14	14
		1-Hour Maximum	690	190	201	270	237	349	201	241
		24-Hour 90th Percentile	-	36	30	39	36	102	33	46
		24-Hour Maximum	275	80	63	113	55	55	61	71
		Annual Mean	55	17	13	16	13	13	14	15

TABLE 2.8 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – CO

Station ID	Station Location	Averaging Period	Carbon Monoxide (µg/m³)							
			AAQC	Year						Ave
				2001	2002	2003	2004	2005	2006	
12008	Windsor Downtown	1 hour Average	-	314	555	ins	579	229	350	406
		1-Hour 90th Percentile	-	688	1328	1448	869	459	591	897
		1-Hour Maximum	36200	5963	5130	5238	2812	1605	3488	4039
		8-Hour Maximum	15700	2414	3343	2957	2112	1352	2317	2416

TABLE 2.9 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – ACROLEIN

Station ID	Station Location	Averaging Period	Acrolein (µg/m³)							
			AAQC - 24 hr	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	24-Hour Average	0.08*	0.11	0.10	0.13	0.05	ND	0.04	0.08
		24-Hour 90th Percentile		0.21	0.15	0.26	0.08	ND	0.08	0.16
		24-Hour Maximum		0.40	0.69	0.31	0.13	ND	0.12	0.33

* Acrolein also has a half hour AAQC of 0.24 ug/m3, however, monitoring data only available on a 24 hour sample
ND = No Data

TABLE 2.10 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – BENZENE

Station ID	Station Location	Averaging Period	Benzene (µg/m³)							
			AAQC	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	24-Hour Average	-	1.3	1.1	1.5	1.5	1.1	1.1	1.2
		24-Hour 90th Percentile		3.4	3.3	2.8	3.4	1.7	1.5	2.7
		24-Hour Maximum		4.5	4.1	6.3	6.3	3.5	2.3	4.5

TABLE 2.11 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – ACETALDEHYDE

Station ID	Station Location	Averaging Period	Acetaldehyde (µg/m³)							
			AAQC – 24 hr	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	24-Hour Average	500*	1.9	1.7	1.7	1.2	ND	1.0	1.5
		24-Hour 90th Percentile		2.6	2.8	2.7	2.0	ND	1.8	2.4
		24-Hour Maximum		5.6	6.0	4.6	2.3	ND	2.0	4.1

* Acetaldehyde also has a half hour AAQC of 500 ug/m³, however, monitoring data only available on a 24 hour sample
ND = No Data

TABLE 2.12 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – FORMALDEHYDE

Station ID	Station Location	Averaging Period	Formaldehyde (µg/m³)							
			AAQC - 24 hr	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	24-Hour Average	65*	2.6	2.7	3.1	2.1	ND	1.7	2.3
		24-Hour 90th Percentile		3.6	4.3	4.9	4.0	ND	3.4	4.1
		24-Hour Maximum		9.6	15.0	11.3	4.5	ND	4.0	8.9

TABLE 2.13 - SIX YEAR SUMMARY OF MOE MONITORING RESULTS – 1,3 BUTADIENE

Station ID	Station Location	Averaging Period	1,3 Butadiene (µg/m³)							
			AAQC - 24 hr	Year						Ave
				2001	2002	2003	2004	2005	2006	
#060211-R	College / South St.	24-Hour Average	N.A	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		24-Hour 90th Percentile		0.2	0.2	0.2	0.2	0.1	0.1	0.2
		24-Hour Maximum		0.4	0.6	0.5	0.5	0.2	0.2	0.4

2.3.1.1 Existing Air Pollutant Concentrations in the Huron Church Rd/Hwy 3 Corridor

As part of the Environmental Assessment, the DRIC team established two ambient air monitoring stations in the study ACA along the existing Huron Church/Talbot Rd. corridor. The stations were located at the Ontario Public Health Laboratory and to the south of St. Clair College. The location of both the DRIC monitoring stations and the MOE stations are shown in Figure 2.3. The distance to roadway for each of these monitoring stations was approximately 45 m.

The monitoring program commenced in September 2006 and continued until October 2007. Detailed results from the DRIC monitoring program are included separately in the Air Quality Monitoring Report.

The main purpose of the monitoring program was to collect data on the total pollutant concentrations of various pollutants that are routinely observed in the corridor. The data are being used to:

- establish current conditions within the corridor;
- assist in determining background air concentrations of the pollutants being measured; and,
- benchmark the air dispersion modelling.

Monitored contaminants included fine particulate from various sources as well as common contaminants from combustion which are:

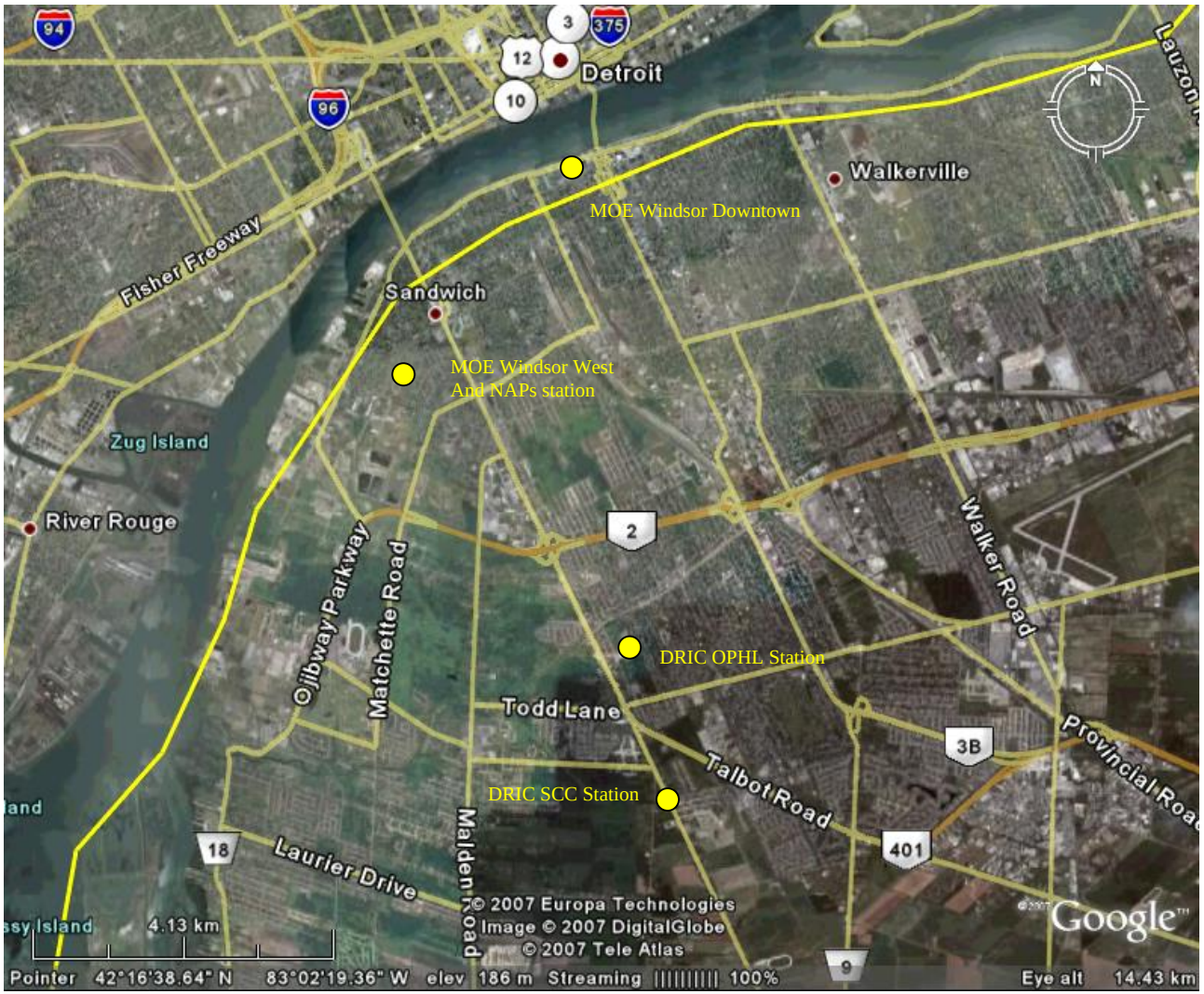
- $PM_{2.5;}$
- NO_2;
- NO_x ;
- Acrolein;
- Benzene;
- Formaldehyde; and
- Acetaldehyde.

Table 2.14 presents a summary of the contaminant measurements collected from the two DRIC stations from November 2006 through October 2007 and compares the results to the MOE monitor stations.

As can be seen with the data, NO_2 concentrations at the DRIC stations are lower than the MOE monitoring station.

$PM_{2.5}$ maximum concentrations are similar between the MOE and DRIC stations; however both the average and the 90th percentile concentrations for the DRIC stations are higher by 10 µg/m^3 for the DRIC stations. One potential difference is that the $PM_{2.5}$ concentrations were measured with two different technologies (the MOE stations used Tapered Element Oscillating Microbalance (TEOMs) and the DRIC station used Beta Attenuation Monitors (BAMs)). Comparative studies generally agree that BAMs measure higher levels of particulate than TEOMs with concentrations differences of up to 20% or higher. Windsor has several industries that also emit large amounts of $PM_{2.5}$. Roadway contribution of $PM_{2.5}$ cannot be ignored but it is difficult to say that the $PM_{2.5}$ difference is due solely to the roadway contribution, particularly given the difference in monitoring technologies.

FIGURE 2.3 - MOE MONITORING STATION LOCATIONS AND DRIC MONITORING STATION LOCATIONS



Acrolein results are higher with the DRIC monitoring than MOE monitoring by a factor of seven. The DRIC monitoring of acrolein used Summa Canisters and the MOE monitoring relies on adsorbent cartridges. Within the last few years the scientific community has started to recognize that that the MOE's method of monitoring may under-report acrolein emissions (Swift 2006). Instead, a better comparison of the acrolein monitoring data would be to the recently released study of Windsor Air Quality by Stocco *et al.* [2008].

This study was conducted to determine the concentrations of indoor and outdoor air quality of Windsor residents. Over 1300 samples were collected at more than 40 residential homes within Windsor. Monitors were located within the house, in the backyard, and were also carried in a backpack by the residents to determine the general exposure of a typical day. Five of the contaminants monitored are common with the contaminants listed previously, including acrolein. Table 2.15 indicates the differences between the Windsor study and the MOE monitoring stations as well as seasonal averages for the DRIC monitoring stations. It is important to note that the Windsor study includes average concentrations only and that the sampling methodologies are different than that of the MOE monitoring stations but are the same as those used in the DRIC project. From the Windsor study it is apparent that acrolein experiences a seasonal variation with summer values higher than winter values by approximately a factor of four. This is also evident in the DRIC data. The DRIC monitoring results are approximately 2 times higher than the Windsor study results with a difference of 0.16 $\mu g/m^3$ in winter and 0.52 $\mu g/m^3$ in summer. Exposure to acrolein from the transportation corridor is still well below the typical indoor air exposure.

Tailpipe emission factors for acrolein are higher in the winter than in the summer by approximately 20%. If tailpipe emissions were responsible for the factor of two-fold increase it would be expected that the difference in winter would be higher than the difference in summer. Therefore, the inconsistency in the results is likely attributable to other factors such as, acrolein precursor concentrations, laboratory differences and detection limits of acrolein.

Recent anecdotal data from Environment Canada indicates that acrolein precursors such as 1,3 butadiene can continue to react in Summa Canisters (the DRIC sampling methodology) and convert to acrolein leading to higher acrolein results if there is a delay between sampling and analysis. The current acceptable methodology allows for an analysis delay of up to 30 days. All of the DRIC canisters were analyzed within the allowable time-frame, however, there is evidence within the DRIC data that the longer time delays may yield higher concentrations. Research by Environment Canada and the US-EPA is on-going to determine whether the allowable analysis timeframe may need to be decreased.

TABLE 2.14 - SUMMARY OF DRIC MONITORING RESULTS (NOVEMBER 2006 – OCTOBER 2007)

Pollutant	Averaging Time	OPHL	SCC	Average of 2 Stations	MOE Monitoring stations
NO_2 (1-hr), µg/m^3	Max	104	110	107	154
	Min	0	0	0	0
	Average	27	23	25	34
	90th Percentile	50	44	47	64
NO_2 (24-hr), µg/m^3	Max	68	52	60	91
	Min	3	3	3	
	Average	27	23	25	34
	90th Percentile	43	36	40	56
$PM_{2.5}$ (24-hr), µg/m^3	Max	48	46	47	45
	Min	8	7	8	
	Average	20	21	21	10
	90th Percentile	32	33	33	21
Benzene	Max	2.2	3.1	2.6	4.5
	Min	0.3	0.3	0.3	
	Average	0.7	0.7	0.7	1.2
	90th Percentile	1.1	1.2	1.2	2.7
Acrolein	Max	4.6	5.4	5.0	0.3
	Min	0.1	0.1	0.1	
	Average	0.8	0.7	0.7	0.1
	90th Percentile	1.8	1.4	1.6	0.2
Acetaldehyde	Max	2.4	2.5	2.4	4.1
	Min	0.2	0.2	0.2	
	Average	0.8	0.9	0.8	1.5
	90th Percentile	1.5	1.6	1.6	2.4
Formaldehyde	Max	5.4	5.7	5.6	8.9
	Min	0.3	0.3	0.3	
	Average	2.1	2.2	2.2	2.3
	90th Percentile	3.4	3.5	3.5	4.1

TABLE 2.15 – WINDSOR STUDY OF EXPOSURE, µg/m³

	Indoor		Outdoor		Personal		MOE
	Winter	Summer	Winter	Summer	Winter	Summer	Average
1,3 Butadiene	0.13	0.11	0.07	0.05	0.16	0.14	0.19
Acetaldehyde	18.4	39.6	3.5	6.6	19.9	39.5	1.5
Acrolein	1.29	5.02	0.14	0.58	1.16	4.04	0.1
Acrolein - DRIC			*0.3*	*1.1*			
Benzene	1.68	1.95	0.97	0.79	1.69	1.96	1.2

Adapted from Stocco, [2008]

2.3.2 Contribution from Upwind / Background Sources

Air dispersion models provide an estimate of the air pollutant concentrations resulting from emission sources that are specifically included in the model set-up and inputs. Concentrations resulting from other upwind (areas to the south and west of Windsor) sources are not included, but must be considered when assessing total expected air pollutant concentrations against relevant standards and guidelines. This is typically done by adding a "background component" to all model predicted results. The Ontario MOE generally advocates the use of 90th percentile air pollutant concentrations obtained from ambient air monitoring stations for this purpose (i.e., background concentrations are lower 90% of the time). This approach is considered to provide a conservative estimate of background concentrations.

Data on the existing air pollutant concentrations in the Windsor area were obtained from the two MOE air monitoring stations. Given their locations in an urban setting proximate to roadways, data from the MOE stations reflect local traffic. The MOE data thus provide somewhat higher background concentrations of pollutants such as NO_x and $PM_{2.5}$ than might otherwise be observed at stations further from traffic but upwind (i.e. south and west) of the study area. However, for the DRIC Study, the two MOE stations were considered to be far enough away from the Huron Church/Highway 3 corridor that existing traffic conditions from this corridor would not be impacting the MOE monitors to any notable degree. The 90th percentile values from the MOE monitoring stations were chosen for all available contaminants.

Total VOC measurements were not available from either the MOE or NAPS stations. Tom Dann from Environment Canada calculated and provided VOC concentrations for the DRIC study for Windsor.

The MOE Technical Support Group, in the absence of specific information, suggests a doubling of $PM_{2.5}$ concentrations for PM_{10} and a doubling of that for PM for calculating background concentrations, therefore the PM_{10} concentrations were calculated as twice the 24 hour average of 21 µg/m³ giving 42 µg/m³ and PM total concentrations were taken as double of 42 µg/m³ for a background of 84 µg/m³.

Table 2.15 presents the selected background concentrations chosen for the DRIC AQ Assessment.

TABLE 2.16 - SUMMARY OF BACKGROUND CONCENTRATIONS USED IN DRIC AQ ASSESSMENT, µG/M3

	1/2 hr	1 hr	24 hr	Annual	8 hr
NO_2		64	56	-	-
$PM_{2.5}$		-	21	10*	-
PM_{10}			42	19*	
PM			84	39	
SO_2		43	43	5	-
CO			897		897
VOCs			147		
Acrolein			0.16		
Benzene			2.7		
Acetaldehyde		2.4	2.4		
Formaldehyde			4.1		
1,3 Butadiene			0.17		

*$PM_{2.5}$ and PM_{10} do not have an annual limit; however, $PM_{2.5}$ annual average was used to derive PM annual background concentration

3.0 AIR DISPERSION MODELLING

Atmospheric dispersion modelling is an essential step in the air quality assessment process as it is the only way to evaluate the impact of future changes in air pollutant emission sources. With respect to the Detroit River International Crossing Study, these changes include implementation of a new access road, plaza and crossing, changes in fuels, vehicle technologies, and traffic volumes.

Dispersion modelling is used to predict atmospheric concentrations of pollutants at specific receptors downwind of the source of pollutants over specific averaging times (i.e., annual, daily, and hourly). The process involves using a computer model to mimic the way pollutants are emitted from sources, and how the atmosphere disperses them. The model takes emissions from a source, estimates how high into the atmosphere they will go, how widely they will spread and how far they will travel based on hourly meteorological data. The model then outputs the pattern of concentrations that will occur at receptors located downwind of the source for the various averaging times.

In general, the maximum air pollutant concentrations (rather than average concentrations) predicted to occur over specific time periods at each receptor are typically used to assess the impact of the 'worst case' meteorological conditions. For an air quality impact assessment that involves sources that are 'ground-based', the 'worst case' conditions are usually periods with light wind speeds when atmospheric dispersion is poor.

3.1 Assessment Methodology

A large amount of data was required to complete the Air Quality Assessment in support of the evaluation of the practical alternatives. This included data on existing air pollutant concentrations in the Windsor area, existing and future traffic volumes on the Huron Church Rd./Highway 3 corridor for each connecting route Alternative and Future No Build scenarios, meteorological conditions in the Windsor area, and geographic information such as the location co-ordinates of roadways and sensitive receptors.

The necessary data was obtained from various sources, including other DRIC team members (i.e., traffic consultant, survey/mapping consultant), Environment Canada and the MOE.

The analysis was completed using the following approach:

1. Characterize Existing Environmental Conditions
    a. Acquire Meteorological Data
    b. Compile data on existing $PM_{2.5}$ and NO_x concentration
    c. Determine background concentrations
2. Acquire data on current and future car and truck traffic volumes
    a. Input to model - traffic data for existing and future conditions, including access road, plaza and crossing alternatives

3. Calculate pollutant emission factors for the highway corridor for existing and future conditions
    a. Input to model - vehicle emissions for each road considered in the assessment, for both $PM_{2.5}$ and NO_x with emission factors specific to each horizon year
4. Use the air dispersion model CAL3QHCR with meteorological data from Windsor Airport to determine future air pollutant concentrations in the vicinity of the corridor (essentially all of west Windsor) and at sensitive receptor locations (such as schools).

An air dispersion model was set up for The Windsor-Essex Parkway connecting route, plaza, and crossings. The selected dispersion model was the CAL3QHCR model, which is specifically designed for roads and highways, and is approved for use in Ontario by the MOE. The model calculates emissions from moving vehicles differently from those that are queued and idling at intersections and inspection plazas. The model also differentiates between at-grade, below-grade and elevated sources.

For The Windsor-Essex Parkway, emissions calculation methodologies had to be modified to reflect the use of tunnels and to assess emissions at the portals of these tunnels. The CAL3QHCR model was used for the assessment as it was deemed to be most appropriate conventional model for assessment.

Over 150 model runs were completed for the analysis of the TEPA as is shown in Table 3.1. PM and PM_{10} were modelled at sensitive receptors for a five year meteorological data set. Other runs were completed for a representative year as discussed in Section 3.2.

TABLE 3.1 – MODEL RUNS

	No Build			TEPA								
	Main Roads			The Windsor Essex Parkway			Plaza B1			Crossing B		
	2015	2025	2035	2015	2025	2035	2015	2025	2035	2015	2025	2035
PM	x	x	X	5	5	5	x	x	x	x	x	x
PM_{10}	x	x	X	5	5	5	x	x	x	x	x	x
$PM_{2.5}$	x	x	X	x	x	x	x	x	x	x	x	x
NO_x	x	x	X	x	x	x	x	x	x	x	x	x
SO_x	x	x	X	x	x	x	x	x	x	x	x	x
CO	x	x	X	x	x	x	x	x	x	x	x	x
VOCs	x	x	X	x	x	x	x	x	x	x	x	x
Acrolein	x	x	X	x	x	x	x	x	x	x	x	x
Acetaldehyde	x	x	X	x	x	x	x	x	x	x	x	x
Formaldehyde	x	x	X	x	x	x	x	x	x	x	x	x
Benzene	x	x	X	x	x	x	x	x	x	x	x	x
1,3 Butadiene	x	x	X	x	x	x	x	x	x	x	x	x
Total Model Runs	36			132								

Note: PM and PM_{10} were modelled at sensitive receptors for all 5 years of meteorological data

3.2 Model Inputs and Set-up

Air dispersion models typically require the following inputs: hourly meteorological data, receptor locations, source characteristics, and emission rates.

3.2.1 Meteorological Data

In order to simulate how air pollutants will disperse as they move away from a source, air dispersion models use hourly meteorological data to simulate the possible meteorological conditions that are routinely experienced in a specific area. The data typically includes mixing height, temperature, cloud cover, cloud opacity, wind speed, and wind direction. These were described in detail in Section 2.1.

As part of the initial assessment of the alternatives a sensitivity test was conducted for the No Build scenario. The CAL3QHCR model can process only one year of data per model run, therefore results for each year of meteorological data were compared to determine the maximum concentration for each contaminant The model results indicated that the meteorological data from 2003 generally resulted in the highest atmospheric concentrations for both contaminants evaluated (NO_x and $PM_{2.5}$). Thus, the analysis for all alternatives was completed using this single year of data. The 2003 wind rose is presented in Figure 3.1. As can be seen in the figure, the 2003 wind rose is similar to the 5-year average, except that the 2003 wind speeds are lower in the quadrants from WSW to SSW, and slightly higher in the ENE quadrant. This is consistent with the model results (i.e., slightly higher predicted concentrations) since lower wind speeds result in poorer dispersion conditions.

To model one contaminant for one horizon year (2015, 2025, 2035) for either No Build or The Windsor-Essex Parkway requires approximately 24 hours of computer run and processing time for each year of meteorology assessed. Due to the large number of model runs required for the analysis, an additional sensitivity test of the meteorological data was conducted to determine the variability in the results over a five year period for both NO_x and PM for The Windsor-Essex Parkway. The results of the sensitivity test are presented in Table 3.2. The 2003 meteorological data represents the maximum concentrations for both NO_x and PM. The largest of the maximum exceedances are slightly lower (by less than 5%) with 2003 than with other meteorological years for PM, however, for many receptors the 2003 meteorological data yields higher exceedances than for the other meteorological years.

All contaminants were modelled using 2003 meteorological data. Both PM and PM_{10} typically show exceedances in transportation corridors and because of the relatively higher exceedances, PM and PM_{10} were modelled at sensitive receptor locations for all five meteorological years for each horizon year (2015, 2025, and 2035). These results are presented in Section 4 of this report.

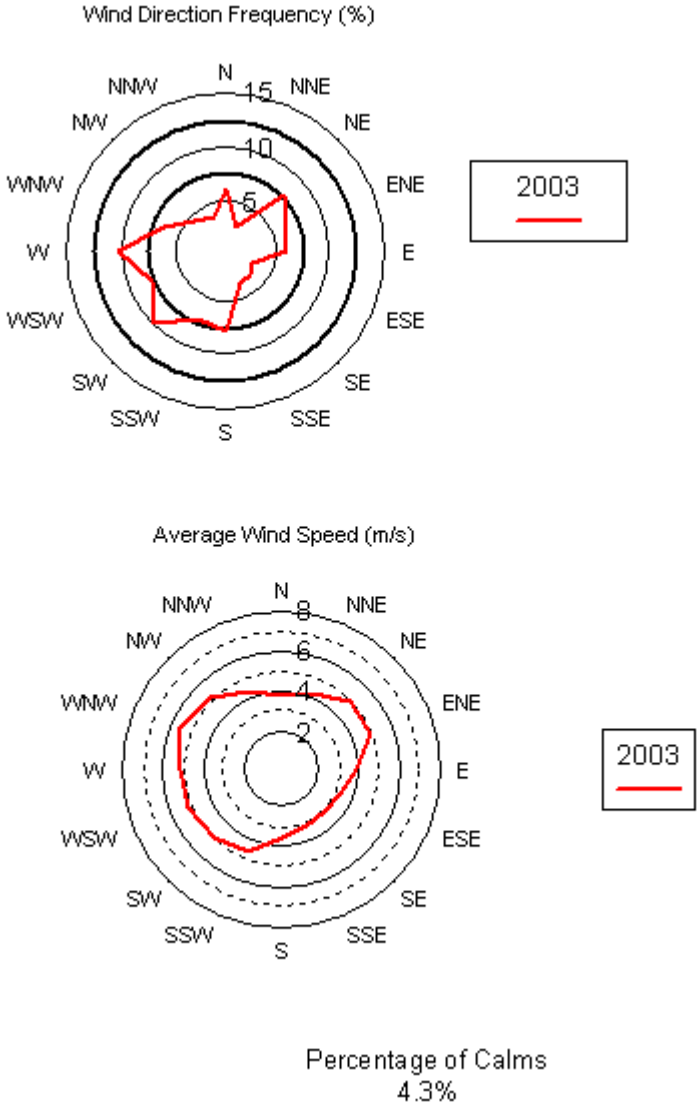
TABLE 3.2 – MAXIMUM CONCENTRATIONS (µG/M³) AND EXCEEDANCES (DAYS) BY METEOROLOGICAL YEAR

	2000	2001	2002	2003	2004	Max	Difference to 2003
NOx 1 hr[1]	210	197	188	218	218	218	0
NOx 24 hr	104	97	99	103	102	104	1
PM 24 hr[2]	305	289	279	325	300	325	0
PM Exceedances	260	261	241	250	248	261	11

1 – NO_x modeled using 2015 TEPA data

2 – PM modeled using 2035 TEPA data

FIGURE 3.1 - 2003 WINDSOR WIND ROSE



3.2.2 Receptors

A gridded network of receptors was created along the corridor at 100 m intervals that covered an area of 500 m from the access road on each side. In order to ensure that the worst-case effects were captured in the model results, several grids with different receptor spacing were used within this area. The first two rows of receptors were placed at 50 m intervals from each side of the ROW, followed by 100 m intervals up to 500 m away. Another grid with 500 m x 500 m spacing was then overlaid to cover the rest of the modelling domain, which was essentially all of west Windsor. Any receptors that fell within the proposed ROW or on local roads were removed to prevent erroneous model results, as the models do not accurately predict air pollutant concentrations at locations on a source (i.e., on the roadway). Sensitive receptors (schools, churches, parks, residential areas etc.) were also identified and included in the model runs and are shown in Table 3.3. Distance to Road in Table 3.3 is the distance to the closest service road, 401 ramp, or to the 401, whichever is closest. Distance to the 401 is the distance from the receptor to the 401. A total of 2484 receptors were used in each model run completed for the analysis as shown in Figure 3.2. Figure 3.2 includes a “zoomed in” area that better indicates the scale of receptor separation distances. The locations of the sensitive receptors are shown in Figure 3.3.

TABLE 3.3 – SENSITIVE RECEPTORS (SEE FIGURE 3.3)

Receptor Number	Receptor Description	Receptor Type	Distance to Road, m	Distance to 401, m
58	Fleming Crt	Residential	50	160
63	Mangin Cr	Residential	50	100
74	Northway and Norfolk	Northway and Norfolk	25	60
75	Northway and Norfolk	Northway and Norfolk	28	70
172	St. Cecile Academic Music - Grand Marais	School	70	120
181	Lambton - closest to ROW	Residential	100	100
186	Northway and Norfolk	Residential	75	120
288	Bellewood Estates	Residential	200	250
295	Lambton	Residential	175	175
403	Bellewood Estates	Residential	300	350
410	Huron Estates	Residential	270	270
423	Reddock	Residential	230	230
425	10th and Todd	Residential	100	200
703	Hearthwood	Residential	20	60
757	Villa Borghese	Residential	100	130
781	Kendleton Court	Residential	100	100
827	Villa Borghese	Residential	200	250
828	Villa Borghese	Residential	200	250
840	Hearthwood	Residential	170	210
848	Villa Paradiso	Residential	200	200
858	Grosvenor to Croydon	Residential	100	125
867	Alpen Rose	Residential	200	350
910	Heritage Estates	Residential	260	320
944	Royal Oak Senior Home	Senior Citizen Home	330	330
945	Royal Oak Senior Home	Senior Citizen Home	260	330
1513	Spring Garden	Residential	250	250
1514	Spring Garden	Residential	250	250
1516	Spring Garden	Residential	200	200
1644	Association for Persons with Physical Disabilities	Special Needs	300	300
1758	Armanda	Residential	350	40
1997	Chelsea	Residential	25	50
2450	Broadway Park	Parkland	150	150
2451	Ojibway Park	Parkland	800	800
2452	Malden Park (On Edge Within) 10 M	Parkland	400	500
2454	Victoria Memorial Park	Parkland	300	625
2455	Sandwich First Baptist	Church	1800	2100
2456	A-Unknown Church	Church	1625	1900
2457	Museum Land Mark	Museum	1800	2100
2458	Indian Memorial Park	Parkland	500	550
2459	Bellwood Park	Parkland	315	370
2460	Beals Park	Parkland	300	370
2461	Oakwood Public School	School	270	320
2462	Oakwood Bible Chapel	Church	60	225
2463	C-Unknown Church	Church	25	200
2464	Our Lady Of Mount Caramel Separate School	School	200	200
2465	Our Lady Of Mount Caramel Catholic Church	Church	250	250
2466	Veteran Memorial Park	Parkland	400	400
2467	St Charbel Maronite Catholic Church	Church	100	200
2468	1- Unknown - Park & Golf Course	Golf Course	200	650
2469	St Stevens Cemetery	Cemetery	300	1250
2470	St Stevens Church	Church	300	1250
2471	Sikh Cultural Society	Community Grp	200	800
2472	Apostolic Christ Church	Church	300	800
2473	Heavenly Rest Cemetery	Cemetery	500	625
2474	St. Nicholas Macedonian Easter	Church	300	800
2475	D-Unknown Church	Church	550	650
2476	J.Jenner Park	Parkland	325	400
2477	Heritage Park	Parkland	280	310
2478	St Clair Park	Parkland	250	300
2479	St Clair College Athletic Field 4 ball diamond	Athletic Centre	150	150
2480	St Clair College	School	350	350
2481	Bellwood Public School	School	370	415
2482	Ecole Monseigeur Jean-Noel	School	380	425
2483	B-Unknown Church	Church	225	400

FIGURE 3.2 - RECEPTOR GRID

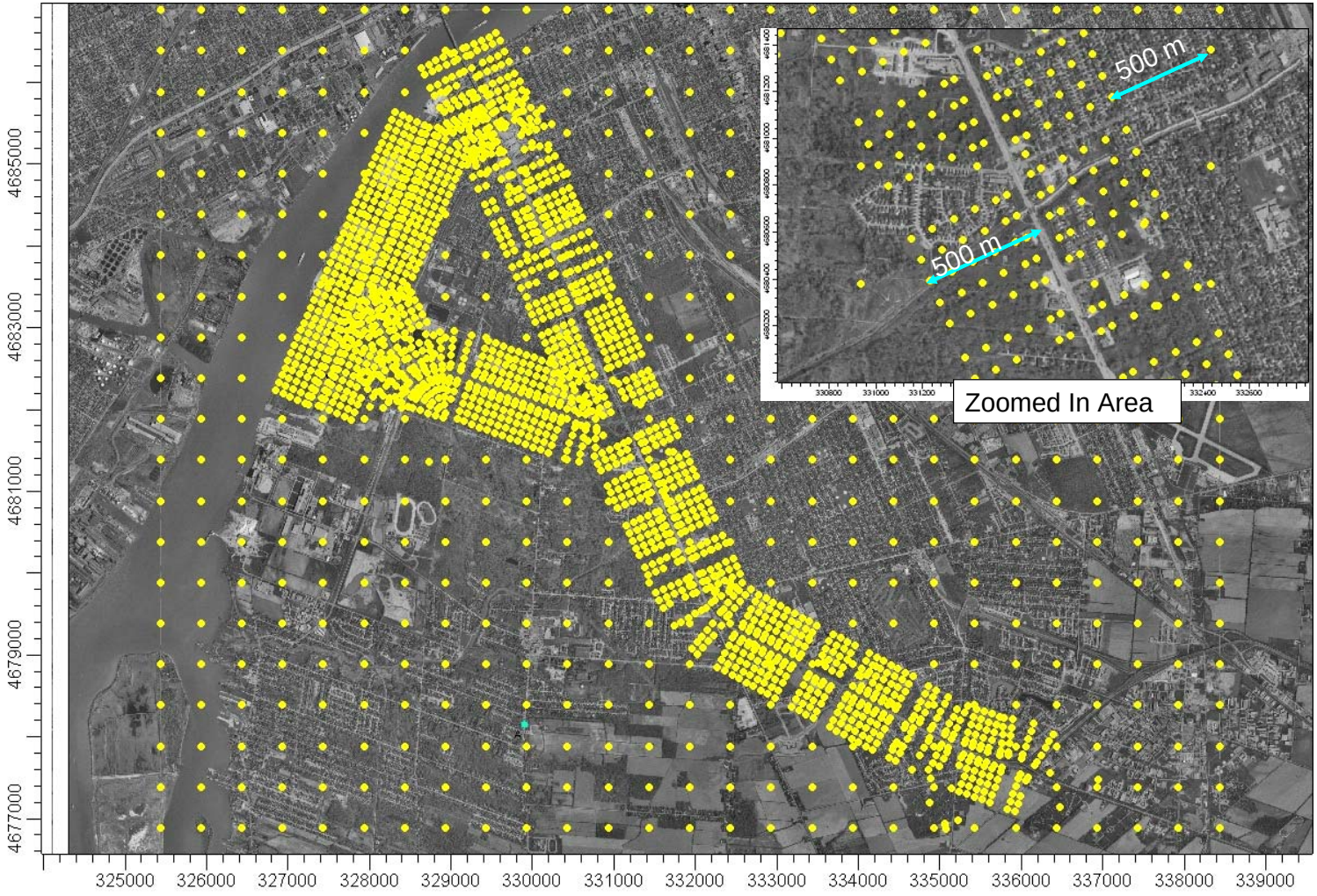
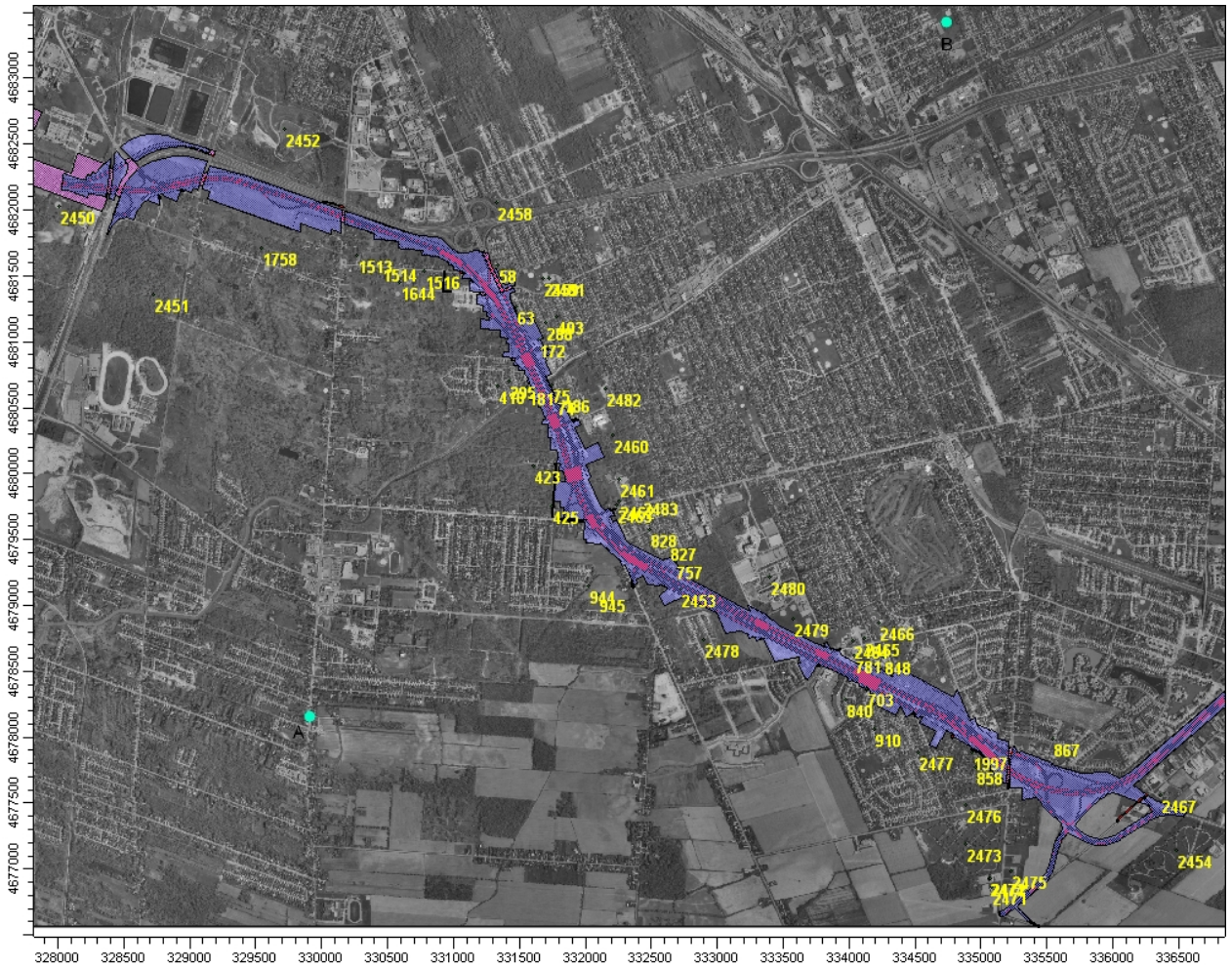


FIGURE 3.3 – SENSITIVE RECEPTOR LOCATIONS



3.2.3 Source Characteristics and Emissions

Each emission source included in an air dispersion model needs to be described and input separately. Source characteristics required for input to the CAL3QHCR model include road segment identification with geographic coordinates, segment width, traffic volumes for free-flowing and idling traffic, and emission factors, which represent vehicle emissions in grams per vehicle kilometre travelled. Additional information on signal timing and intersection capacity was required for road segments where vehicles queue, such as intersections. The Universal Transverse Mercator (UTM) (geographic) coordinates of all road segments and intersections were determined from digital orthographic aerial photographs combined with AutoCAD drawings of the proposed connecting route, plaza and crossing alternative. All elements were combined in a Geographic Information System (GIS) for data maintenance. Over 700 free-flowing roadway sources (i.e., Highway 401, sections of Huron Church Road) and almost 150 queue sources (i.e., signalized intersections where vehicles wait for a green light) were included in each model run for the assessment of the connecting route alternatives.

Details on the roadway segments considered in the assessment are included in Appendix A.

3.2.3.1 Traffic Volumes

Annual Average Daily Traffic (AADT) volumes for the roadway segments, plazas and crossings for the future TEPA and No Build cases for 2015, 2025 & 2035 were provided by IBI Group and URS Canada. For details on how the traffic predictions were developed, refer to the *Level 2 Traffic Operations Report [February 2008].*

A selection of traffic volumes from the main routes considered in this assessment is presented below in Table 3.3 to illustrate the relative magnitude of the volumes (Table 3.4). The full record of traffic data used in the assessment is presented in Appendix A. These data form the basis of the emission calculations used in the dispersion modeling analysis.

Hourly profiles for typical daily use of car and truck traffic on different roadway types (i.e., highway, major arterial, local roads) were also provided and were used to convert the AADT volumes into hourly volumes. These hourly volumes of domestic and international cars and trucks on each roadway segment were used to estimate emissions of the contaminants from each source. Separate weekday and weekend traffic patterns were provided to SENES and used to represent actual expected traffic conditions. Idling traffic volumes and queue lengths were calculated by the CAL3QHCR air dispersion model based on the number of vehicles that approach an intersection, the signal timing and the capacity of each intersection. The vehicles approaching an intersection queue were conservatively assumed to be same as the free-flowing traffic volume.

Overall, while traffic in Windsor is expected to be similar between No Build and The Windsor-Essex Parkway, the difference is in the distribution of the traffic through other Windsor border crossing corridors. Traffic is expected to be reduced at both the Ambassador Plaza and the Windsor-Detroit Tunnel with the new crossing in place when compared to the No Build scenario. There will be additional traffic increase as traffic

currently moving through the Sarnia Blue Water Bridge is diverted to the new crossing. In general, traffic with The Windsor-Essex Parkway and along the Huron Church Corridor is expected to increase by 30-50% relative to No Build. While not shown in Table 3.4, traffic north of E.C. Row along Huron Church is expected to decrease by approximately 20% relative to No Build and traffic in other areas of Windsor is expected to decrease as The Windsor-Essex Parkway allows for less interrupted driving conditions. Table 3.5 illustrates the change in traffic predicted relative to 2015 for both No Build and The Windsor-Essex Parkway.

TABLE 3.4 - SUMMARY OF DAILY TRAFFIC VOLUMES ON MAIN ROADS

Major Intersections	2015			2025			2035		
	No Build	Parkway	Pct change	No Build	Parkway	Pct change	No Build	Parkway	Pct Change
Labelle to Grand Marais	55,935	66,048	18%	58,108	77,985	34%	66,484	86,281	30%
Grand Marais to Todd Cabana	55,402	61,921	12%	56,437	74,107	31%	64,921	82,259	27%
Todd Cabana to Huron Church	46,444	60,310	30%	47,660	70,331	48%	54,504	79,526	46%
Huron Church to Cousineau	38,171	55,107	44%	36,576	63,445	73%	43,384	70,719	63%
Cousineau to Howard	33,268	53,475	61%	31,647	61,283	94%	36,405	67,333	85%
Average	45,844	59,372	30%	46,086	69,430	51%	53,140	77,224	45%

TABLE 3.5– TRAFFIC VOLUME CHANGES ON MAIN ROADS

HIGHWAY 401 Mainline	2025-2015		2035 - 2025		2035 - 2015	
	No Build	Parkway	No Build	Parkway	No Build	Parkway
Labelle to Grand Marais	4%	18%	14%	11%	19%	31%
Grand Marais to Todd Cabana	2%	20%	15%	11%	17%	33%
Todd Cabana to Huron Church	3%	17%	14%	13%	17%	32%
Huron Church to Cousineau	-4%	15%	19%	11%	14%	28%
Cousineau to Howard	-5%	15%	15%	10%	9%	26%
Average	0%	17%	15%	11%	15%	30%

3.2.3.2 Vehicle Emissions Estimates

Emissions from vehicles traveling on public roadways account for a significant portion of the smog producing air pollutants in North America. Although tailpipe emissions are the major source of gaseous pollutants (such as NO_x), they are not the major source of particulate emissions. In most cases, tailpipe emissions are a small fraction of the total particulate emissions from roadways during free-flow traffic conditions. As cars and trucks travel over the surface of a roadway, there are other sources in addition to tailpipe emissions that contribute to overall particulate emissions. These other sources include road abrasion and degradation, tire and brake wear, and soil/mud/debris that are deposited on the surface. Particulate from these other (non-tailpipe) sources is collectively known as surface resuspended particulate. When vehicles queue and idle, the particulate emissions are 100% from the tailpipe, as there are no emissions from the roadway surface if the vehicles are not moving.

For tail pipe emissions, idling cars emit approximately 4 times more particulate than free-flowing cars, and idling diesel trucks emit over 25 times more particulate than free-flowing diesel trucks. However, vehicles generally spend less time idling, unless the roadways are completely congested. Because of the significant difference between particulate emissions from idling and moving vehicles, the inclusion of queuing in the analysis is an

important and necessary consideration. The freeway extension is expected to divert most of the traffic currently following the existing corridor (which requires periodic idling at intersections) to a free-flowing state which would reduce tailpipe emissions from idling.

Emission factors were developed separately for vehicle exhaust using Environment Canada's MOBILE 6.2C model and surface roadway emissions (i.e., road dust) using U.S. EPA emission factor methodologies (i.e., AP-42). Separate emission factors were developed for cars and trucks, and incorporate:

- regulatory changes in fuels and engine technologies;
- differences in Canadian and U.S. fuels and vehicles; and
- Canadian and U.S. fleet turnover rates.

Recent and on-going improvements in emission control technologies and fuels will combine to substantially reduce the emissions from transportation sources. As of June 2006, the maximum amount of sulphur in on-road diesel fuel was reduced from 500 mg/kg to 15 mg/kg. This reduction was necessary for sulphur levels in Canadian on-road fuels to be consistent with U.S. levels, and to ensure that advanced emission control technologies on newer engines would be effective. In January 2007, additional engine standards for heavy-duty vehicles came into effect in the US that will also impact the Canadian fleet. These standards reduce NO_x and particulate matter tail-pipe emissions by 60% and 90% respectively over existing levels and require the incorporation of additional emission control technologies on these newer engines to effect these reductions.

Since the area considered in the assessment includes a number of different types of roads, the development of the emission factors considered appropriate vehicle speeds for each road type. Different emission factors were applied to each road based on the current or future assumed posted speed limits. The assessment also spans a long period of time,over which several regulated changes to fuel characteristics and vehicle engine technologies will occur. Although the effect of fuel changes on emissions starts to occur immediately following the implementation of the changes, technological changes require several years before the effects of the changes are fully observed. As such, the historical vehicle fleet turnover rates from the Detroit and Windsor areas were obtained from Air Improved Resource, Inc. and used to reflect the impacts of technological changes on vehicle emissions.

There is a difference in particulate matter releases with idling and what is known as "creep" in diesel vehicles. Creep occurs at plazas and at heavy use intersections where full flow through an intersection is unlikely without at least one other stop and is the process of moving slowly, stopping, and moving slowly again. For the purposes of this assessment, creep was assumed to occur at the Plaza and idling occurring at the intersections. As can be seen in the tables below, creep can generate up to three times the emissions of idling for particulate matter contaminants (there is no significant change for the other contaminants and thus creep was not separately calculated). While creep could be expected to occur at some of the intersections, particularly under the No Build scenario, it would be complicated to model those intersections separately with the CAL3QHCR model. Using idle emission factors for the intersections under No Build could under-predict the emissions at the No Build scenarios, particularly in the later years with the traffic increases (and related increases in queuing) predicted in the future. However,

using idle emission factors avoids the potential criticism that the No Build results have been artificially inflated to make The Windsor-Essex Parkway look better in comparison.

Table 3.6 presents a summary of the emission factors used in this assessment. Cars and trucks entering Canada from the U.S. were assumed to have U.S. vehicle and fuel characteristics, whereas cars and trucks exiting Canada were assumed to have Canadian vehicle and fuel characteristics. These assumptions are expected to adequately represent the fleet characteristics and emissions in the Windsor area, particularly on a daily basis, as some vehicles will both exit and enter on the same day. The complete database of emission factors, fleet turnover information and other assumptions used in the MOBILE6.2C model can be found in Appendix B. Sample calculations are presented in Appendix C.

From the tables below there are several key points that can be observed.

- Truck emission factors are up to almost six times higher than car emissions at 100 km/hr.
- NO_x emission factors for 2025 and 2035 are 20% of those for 2015 for trucks and 40% for cars.
- Taking into account of increased traffic, there is very little change between emissions between 2025 and 2035.
- An idling truck releases between 50 – 200 times more PM and NOx than an idling car.
- There are only marginal differences between Canadian and US emission factors.

These observations are highlighted in Figures 3.4 through 3.7.

FIGURE 3.4 – TRUCK EMISSION FACTORS RELATIVE TO CAR EMISSION FACTORS AT 100 KM/H

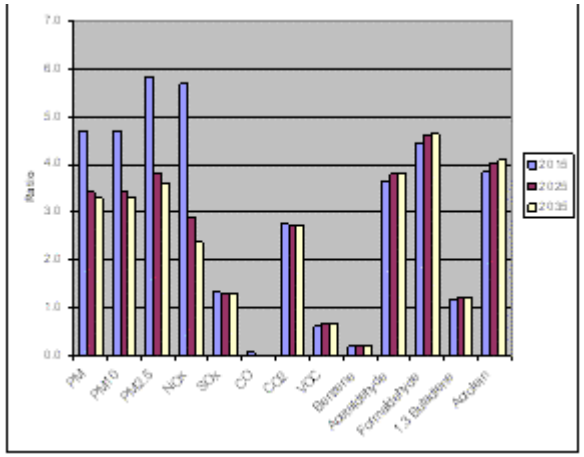


FIGURE 3.5 – CHANGES IN TRUCK EMISSION FACTORS OVER TIME, RELATIVE TO 2015

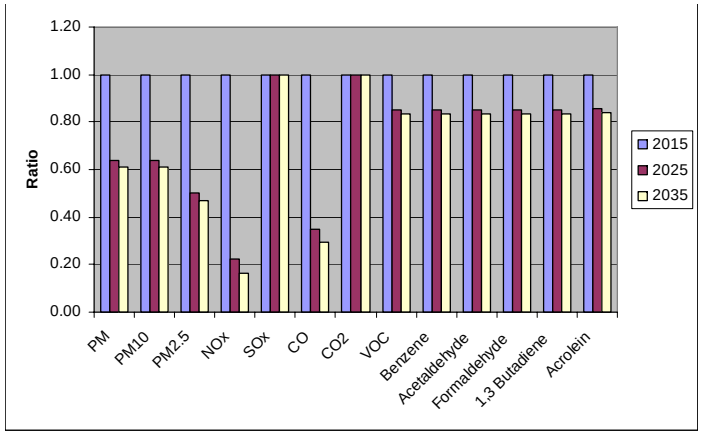


FIGURE 3.6– CHANGES IN CAR EMISSION FACTORS OVER TIME, RELATIVE TO 2015

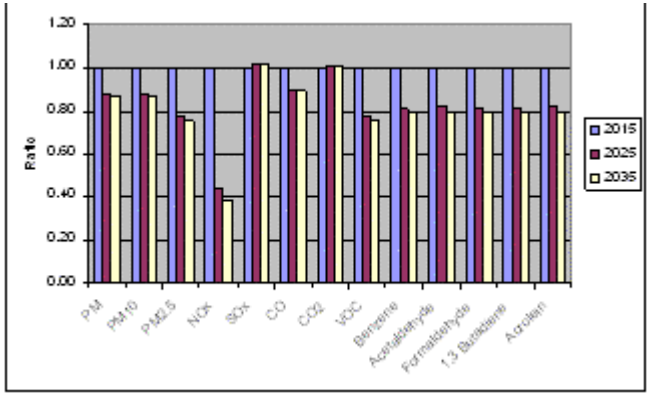


FIGURE 3.7– TRUCK EMISSION FACTORS RELATIVE TO CAR EMISSIONS FACTORS FOR IDLING

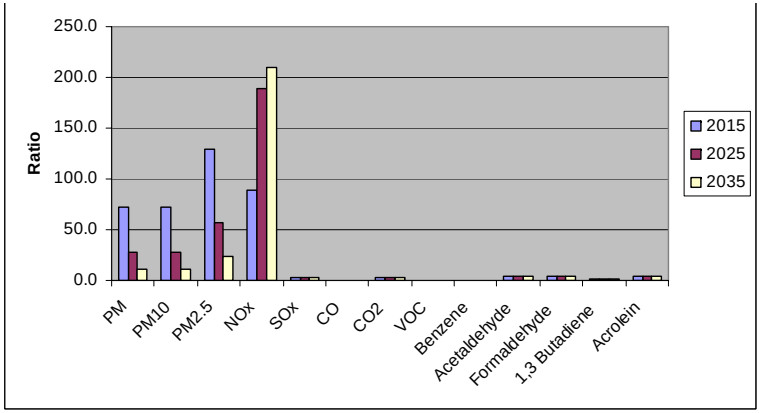


TABLE 3.6 - SUMMARY OF EMISSION FACTORS (G/VKT) USED IN THE ASSESSMENT

2015

Canada Car

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Idle	0.0161	0.0161	0.0086	1.319375	0.01075	29.3075	1398.5	2.7	0.053156	0.008438	0.01955	0.005825	0.001367
25	0.003977	0.003977	0.0021	0.438377	0.004722	6.366569	347.595	0.378726	0.010776	0.00199	0.004724	0.001227	0.000319
50	0.003989	0.003989	0.002125	0.400008	0.004722	5.876618	347.595	0.283967	0.008702	0.001411	0.003267	0.000952	0.000228
75	0.003989	0.003989	0.002125	0.492281	0.004722	6.592282	347.595	0.268277	0.008531	0.001334	0.003068	0.000927	0.000211
100	0.003989	0.003989	0.002125	0.492281	0.004722	6.592282	347.595	0.268277	0.008531	0.001334	0.003068	0.000927	0.000211

Canada Truck

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Creep (plazas)	3.356871	3.356871	3.155459										
Idle (main roads)	1.1014	1.1014	1.068358	113.6788	0.02875	3.835	3862	1.0225	0.01125	0.030875	0.0838	0.006525	0.005
25	0.019123	0.019123	0.012878	2.345055	0.007146	0.958154	959.8942	0.326841	0.003598	0.009867	0.026794	0.002088	0.001599
50	0.019123	0.019123	0.012878	2.024427	0.007146	0.489019	959.8942	0.18579	0.002044	0.005605	0.015211	0.001187	0.000911
75	0.019123	0.019123	0.012878	2.908639	0.007146	0.508282	959.8942	0.159692	0.001758	0.004822	0.013086	0.001019	0.000779
100	0.019123	0.019123	0.012878	2.908639	0.007146	0.508282	959.8942	0.159692	0.001758	0.004822	0.013086	0.001019	0.000779

US Car

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Idle	0.01575	0.01575	0.00855	1.201875	0.01225	25.02438	1404.75	2.340625	0.05765	0.007956	0.017444	0.005044	0.001217
25	0.003927	0.003927	0.002063	0.397367	0.00553	5.487018	349.1485	0.331812	0.011752	0.001894	0.004297	0.001073	0.00029
50	0.003902	0.003902	0.002113	0.362725	0.005592	5.079709	349.1485	0.251345	0.009558	0.001344	0.002945	0.000836	0.000203
75	0.003902	0.003902	0.002113	0.443504	0.005592	5.665197	349.1485	0.238296	0.009409	0.001272	0.002759	0.000814	0.000188
100	0.003902	0.003902	0.002113	0.443504	0.005592	5.665197	349.1485	0.238296	0.009409	0.001272	0.002759	0.000814	0.000188

US Truck

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Creep (plazas)	3.51463	3.51463	3.303752										
Idle (main roads)	1.19004	1.19004	1.154339	111.8709	0.0265	3.3325	3863.5	1.0025	0.01105	0.030275	0.082225	0.006425	0.0049
25	0.018066	0.018066	0.011899	1.937435	0.006587	0.832637	960.267	0.320628	0.003529	0.009681	0.02629	0.002051	0.001566
50	0.018066	0.018066	0.011899	1.666518	0.006587	0.425018	960.267	0.182062	0.002007	0.005499	0.014925	0.001162	0.000895
75	0.018066	0.018066	0.011899	2.412163	0.006587	0.441795	960.267	0.156586	0.001721	0.004729	0.012838	0.001	0.000762
100	0.018066	0.018066	0.011899	2.412163	0.006587	0.441795	960.267	0.156586	0.001721	0.004729	0.012838	0.001	0.000762

2025

Canada Car

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Idle	0.01405	0.01405	0.0066	0.63	0.01075	26.55875	1411.25	2.2625	0.043263	0.006894	0.015888	0.004769	0.001108
25	0.003455	0.003455	0.001616	0.200392	0.004785	5.765703	350.764	0.305249	0.008743	0.001619	0.003826	0.000999	0.000259
50	0.003467	0.003467	0.001628	0.184547	0.004785	5.338045	350.764	0.225247	0.007118	0.001159	0.002667	0.000781	0.000184
75	0.003467	0.003467	0.001628	0.211888	0.004785	5.997164	350.764	0.212354	0.007004	0.001097	0.002513	0.000763	0.000172
100	0.003467	0.003467	0.001628	0.211888	0.004785	5.997164	350.764	0.212354	0.007004	0.001097	0.002513	0.000763	0.000172

Canada Truck

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Creep (plazas)	1.08639	1.08639	1.021206										
Idle (main roads)	0.32372	0.32372	0.314008	115.4153	0.02875	1.22	3860.75	0.8575	0.009425	0.02585	0.070225	0.005475	0.0042
25	0.011837	0.011837	0.006167	0.455465	0.007146	0.305093	959.5835	0.274025	0.003014	0.00827	0.02245	0.001752	0.001342
50	0.011837	0.011837	0.006167	0.388978	0.007146	0.155343	959.5835	0.155343	0.001709	0.004698	0.012751	0.000994	0.000762
75	0.011837	0.011837	0.006167	0.572283	0.007146	0.162178	959.5835	0.133595	0.001473	0.004039	0.010967	0.000857	0.000655
100	0.011837	0.011837	0.006167	0.572283	0.007146	0.162178	959.5835	0.133595	0.001473	0.004039	0.010967	0.000857	0.000655

US Car

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Idle	0.0141	0.0141	0.00665	0.59125	0.01225	22.0225	1417	1.876875	0.045381	0.006406	0.01405	0.004	0.000958
25	0.003467	0.003467	0.001628	0.188586	0.005592	4.829763	352.1932	0.256626	0.009235	0.001529	0.003473	0.000851	0.000232
50	0.00348	0.00348	0.00164	0.172897	0.005654	4.473717	352.1932	0.190916	0.007581	0.001089	0.002388	0.000666	0.000164
75	0.00348	0.00348	0.00164	0.201014	0.005654	4.995358	352.1932	0.180508	0.007517	0.001035	0.002245	0.000656	0.000155
100	0.00348	0.00348	0.00164	0.201014	0.005654	4.995358	352.1932	0.180508	0.007517	0.001035	0.002245	0.000656	0.000155

US Truck

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Creep (plazas)	1.46342	1.46342	1.375615										
Idle (main roads)	0.44758	0.44758	0.434153	115.6459	0.0265	1.2875	3860.75	0.8625	0.0095	0.026075	0.0708	0.005525	0.004233
25	0.011992	0.011992	0.006322	0.503311	0.006587	0.32187	959.5835	0.275889	0.003039	0.008339	0.022637	0.001765	0.00135
50	0.011992	0.011992	0.006322	0.429989	0.006587	0.164042	959.5835	0.156586	0.001727	0.004735	0.01285	0.001	0.000771
75	0.011992	0.011992	0.006322	0.631313	0.006587	0.170877	959.5835	0.134838	0.001485	0.00407	0.011054	0.000864	0.000663
100	0.011992	0.011992	0.006322	0.631313	0.006587	0.170877	959.5835	0.134838	0.001485	0.00407	0.011054	0.000864	0.000663

2035

Canada Car

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Idle	0.0139	0.0139	0.0065	0.58	0.01075	26.37	1411.25	2.243125	0.042488	0.006769	0.015594	0.004681	0.001075
25	0.00343	0.00343	0.001591	0.182838	0.004785	5.722673	350.764	0.300899	0.008578	0.001586	0.003753	0.000979	0.000253
50	0.003442	0.003442	0.001603	0.168547	0.004785	5.300296	350.764	0.22183	0.006989	0.001137	0.002619	0.000766	0.00018
75	0.003442	0.003442	0.001603	0.190606	0.004785	5.95662	350.764	0.209091	0.006883	0.001078	0.00247	0.000749	0.00017
100	0.003442	0.003442	0.001603	0.190606	0.004785	5.95662	350.764	0.209091	0.006883	0.001078	0.00247	0.000749	0.00017

Canada Truck

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Creep (plazas)	0.58878	0.58878	0.553453										
Idle (main roads)	0.16016	0.16016	0.155355	115.4153	0.02875	1.0525	3860.75	0.845	0.0093	0.025525	0.069275	0.0054	0.004133
25	0.011387	0.011387	0.005779	0.341133	0.007146	0.263461	959.5835	0.270296	0.002976	0.008159	0.022152	0.001727	0.001326
50	0.011387	0.011387	0.005779	0.291423	0.007146	0.134216	959.5835	0.153479	0.00169	0.004635	0.012577	0.000982	0.000754
75	0.011387	0.011387	0.005779	0.428746	0.007146	0.139809	959.5835	0.131731	0.001454	0.003983	0.010818	0.000845	0.000646
100	0.011387	0.011387	0.005779	0.428746	0.007146	0.139809	959.5835	0.131731	0.001454	0.003983	0.010818	0.000845	0.000646

US Car

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Idle	0.01385	0.01385	0.0065	0.52	0.01225	21.78438	1417	1.854375	0.044256	0.006225	0.013625	0.0039	0.000933
25	0.003405	0.003405	0.001578	0.16311	0.005592	4.776946	352.1932	0.2515	0.008999	0.001484	0.003366	0.000831	0.000224
50	0.00343	0.00343	0.001603	0.14975	0.005654	4.427425	352.1932	0.186877	0.007401	0.001058	0.002319	0.000649	0.000155
75	0.00343	0.00343	0.001603	0.170722	0.005654	4.944561	352.1932	0.17678	0.007343	0.001008	0.002186	0.000637	0.000147
100	0.00343	0.00343	0.001603	0.170722	0.005654	4.944561	352.1932	0.17678	0.007343	0.001008	0.002186	0.000637	0.000147

US Truck

Speed (km/h)	PM	PM10	PM2.5	NOx	SOx	CO	CO2	VOC	Benzene	Acetaldehy	Formaldeh	1,3 Butadie	Acrolein
Creep (plazas)	0.589956	0.589956	0.554559										
Idle (main roads)	0.16048	0.16048	0.155666	115.6459	0.0265	1.0525	3860.75	0.845	0.0093	0.025525	0.069275	0.0054	0.004133
25	0.011387	0.011387	0.005779	0.341133	0.006587	0.263461	959.5835	0.270296	0.002976	0.008159	0.022152	0.001727	0.001326
50	0.011387	0.011387	0.005779	0.291423	0.006587	0.134216	959.5835	0.153479	0.00169	0.004635	0.012577	0.000982	0.000754
75	0.011387	0.011387	0.005779	0.428746	0.006587	0.139809	959.5835	0.131731	0.001454	0.003983	0.010818	0.000845	0.000646
100	0.011387	0.011387	0.005779	0.428746	0.006587	0.139809	959.5835	0.131731	0.001454	0.003983	0.010818	0.000845	0.000646

* Idle emission rates expressed as g/hr

In regards to traffic movements, the following additional assumptions were made:

- Vehicles on Highway 401 will be moving in a free-flowing state;
- Vehicles on service roads (and north of E.C. Row) will generally move in free-flow, but will queue at signalized intersections;
- Inbound vehicles at the customs plaza will queue at booths; and
- Outbound vehicles at the customs plaza will not queue.

3.2.3.3 Customs / Inspections Plaza

The traffic conditions at the customs plazas were modeled using a similar queuing algorithm that was used for the intersections. Volumes of cars and trucks entering Canada from the U.S. as well those leaving Canada were provided to SENES by IBI and URS Canada for the years 2015, 2025, and 2035.

The amount of queuing at the plaza was estimated using the hourly traffic volume and the number of booths that are open during each hour, in addition to the average duration of each vehicle at a booth. The number of booths open in each hour was assumed to be a function of the traffic volume entering the plaza. Queues of cars and trucks form at car and truck booths respectively, and thus were modelled separately. Design information regarding plaza operations and vehicle timings were provided by Stantec.

With respect to plaza queuing, the following assumptions were used:

- Each truck requires 60 seconds at the primary inspection booth.
- Each car requires 45 seconds at the primary inspection booth.
- There is always queuing (idling) at the booth due to the one vehicle in the booth being inspected.
- Number of open booths assumed to be slightly less than capacity such that some minimal queuing (2 or 3 cars or trucks) is always occurring at open booths.
- During periods where the capacity of the plaza is exceeded, longer queues form back towards the plaza entrance.

Groups of queue links were set up for each plaza car and truck lane based on an equal hourly distribution of free-flow traffic through each booth that is open during a given hour. The groups extended back away from the booths to accommodate longer and longer queue lengths, as necessary. Each queue link was then manually “turned on” or “off” by calculating the number of vehicles queued at the open booths.

Based on the methodology and assumptions outlined above and the inbound traffic volumes through the plaza provided by IBI, the maximum number of plaza booths open at any given time was 17 truck booths and 9 car booths at any of the new Customs/Inspection Plaza Alternatives.

The same methodology was applied to the Ambassador Bridge plaza for the future No Build scenarios and TEPA. Using this approach, the queue lengths at the Ambassador Bridge often extended back across the Ambassador Bridge and

onto Huron Church Road for the future no-build scenarios, which is what would be expected.

3.2.3.4 The Windsor-Essex Parkway Tunnel Emissions

For The Windsor-Essex Parkway, emissions for the tunnels were considered to be emitted from the ends of the tunnels and dispersed over a short distance (generally varying by tunnel width) from the ends of the tunnels. The tunnel structures are typical of most overpass structures and are open between opposing traffic directions such that air can flow freely between the opposing traffic thus the piston effect seen with longer tunnels is minimized. In addition, the amount of turbulence from the tunnel egress points could be expected to impact both traffic flow directions. All of the contaminants were considered to be fully emitted from the tunnels and there was no allowance for deposition of particulate matter within the tunnels.

The emissions at each portal were modeled using CAL3QHCR, and included both tailpipe and resuspended emissions from within the tunnels. Appendix C has additional information on the emissions calculations.

3.2.4 Model combinations

The work undertaken for this project required an assessment of local impacts, as well as an assessment of end-to-end solutions.

In order to complete all of the necessary model runs, the models were run in blocks of roadway/facility type. For each pollutant, separate runs were set up for the connecting route, the plaza and the crossing.

These model runs were completed on the same receptor network, and the results were output as hourly and/or daily values for the entire year of meteorology, at each receptor. The model results for each necessary combination of blocks were then added together to provide the hourly or daily maximum concentrations. A computer program was developed using the Linux operating system to overlay the necessary files. The combinations considered in this assessment are outlined below.

A model input file was prepared for each necessary run, as outlined above and run using one year of meteorological data (2003). As noted earlier, PM and PM_{10} were run at sensitive receptors for all five meteorological years. The models were run on the Linux operating system, which offers more flexibility and memory in terms of processor use, file storage and manipulation of large data files.

Once the model runs were complete, the data was post-processed by adding the necessary data component results together (i.e., connecting route + plaza+ crossing) to form complete end-to-end results.

4.0 OVERVIEW OF MODEL RESULTS

As discussed earlier, air dispersion models calculate air pollutant concentrations at the receptor locations specified by the user in the model inputs. For this study, gridded networks of receptors were used along the roadway, as well as specific sensitive receptor locations (see Section 3.2.2). This chapter presents the results of the air dispersion modeling that was undertaken for both No Build and the TEPA.

The results from the No Build Alternative represent the predicted air quality conditions that will occur if no transportation improvements are undertaken in the corridor but assume a projected traffic growth for each of the horizon years.

For the various modelling scenarios, the combined total traffic in Windsor is the same for both the No Build and The Windsor-Essex Parkway. However, distribution of the traffic is different between No Build and The Windsor-Essex Parkway. In the No Build scenario traffic is more widely distributed on the road network, and thus the No Build scenario would have air quality impacts in the City of Windsor outside of the Area of Continued Analysis.

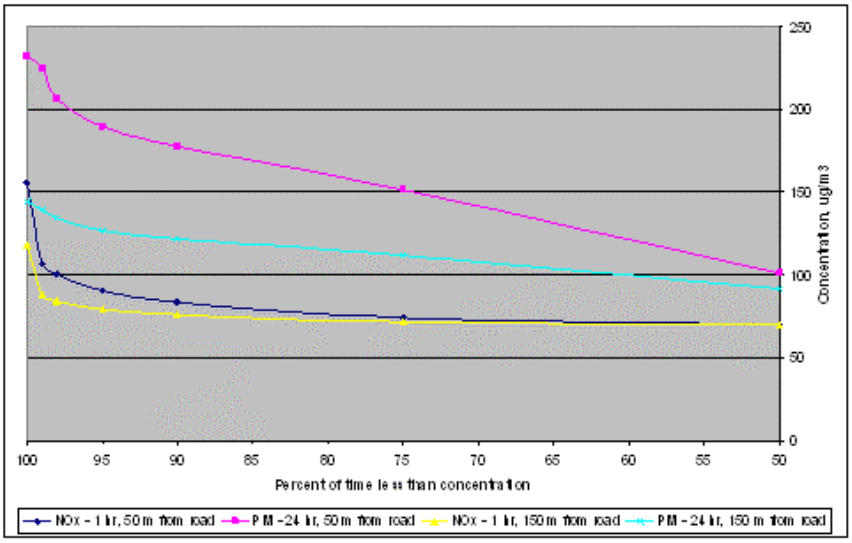
Thus, all results have been presented in relation to this condition, such that the expected change in air quality due to the TEPA (i.e., air pollutant concentrations) is apparent.

It is important to note that the values presented in this report are not indicative of typical conditions because 90% of the time the actual background levels are less than those which are added to the modeled concentrations. In addition, the maximum conditions that are being used for comparison purposes represent the highest concentration at any one receptor within the roadway segment within a modelled one year period and do not represent the average or more typical concentrations across all of the receptors within the roadway segment.

One other point of note is that the maximum conditions do not occur at all receptors concurrently. It is impossible to have the wind blowing in all directions simultaneously.

For many situations the maximum values are not representative of conditions that occur even 95% or 98% of the time. Figure 4.1 shows both PM and NO_x concentrations at two receptors at different distances from the road. As can be seen for the curve representing NO_x – 1 hr for a receptor approximately 50 m from the road, concentrations drop from 150 $\mu g/m^3$ to less than 100 $\mu g/m^3$ by the 98th percentile. This curve can be interpreted as "98% of the time, concentrations will be below 100 $\mu g/m^3$, even when a background that for 90% of the time is actually lower than the assumed concentration is added to the modelled results". For transportation projects, these curves are typically more pronounced closer to the roadways. For NO_x, PM, and PM_{10}, concentrations at maximum and 90th percentile will be presented when warranted to enhance the discussion of frequency of occurrence.

FIGURE 4.1 – CONCENTRATION CHANGES AND PERCENTILES



The MOE publishes air quality conditions in different locations, including Windsor, in Ontario through their Air Quality Index (AQI). This information is available to the public on an hourly basis. The AQI is an indicator of air quality based on the highest pro-rated hourly pollutant measurements of six common air contaminants, of which NO_2 and $PM_{2.5}$ are considered. The range of concentration of the contaminants determines the AQI. When $PM_{2.5}$ is the driver for air quality, a change of about 6 µg/m^3 is required to move the Index from one rating to another. For NO_2 the concentration differences required to move the Index from one rating to another is about 100 µg/m^3. Table 4.1 indicates the changes in concentration required for an AQI to change. These factors were considered in evaluating the results of the air quality modelling.

TABLE 4.1 – CHANGES IN CONCENTRATION TO IMPACT TO AQI

Contaminant	Change, µg/m^3
$PM_{2.5}$	7.0
SO_2	200
NO_2	100
CO	15 000

In addition, where the concentrations (which include background at the upper 90th percentile) were predicted to exceed Federal or Provincial standards, objectives or guidelines, the change in the number of times the concentration was predicted to exceed (i.e., number of exceedances) was also reported, relative to the No Build Alternative. These measures were used to assess the potential impacts of any predicted changes to air quality.

The results presented below generally follow the expected trends based on the changes in vehicle emission factors (see Appendix B) and increases in traffic volumes (see Appendix A) over time. In summary, results of the modelling indicate that:

- the concentrations of the contaminants decrease as the distance from the roadway increases;
- with the exception of near the Plaza for $PM_{2.5}$ and NO_x 1 hr concentrations under maximum conditions, there are no differences in concentrations relating to The Windsor-Essex Parkway that would cause the AQI to be degraded
- gaseous contaminants generally reduce over time though the reduction is partially off-set by the increase in traffic; and
- the PM concentrations increase with time, as traffic volumes are predicted to increase from 2015 through 2035.

NO_x concentrations decrease over time as the emission factors for cars and non-idling trucks are going to be significantly reduced in the future to the extent that emissions are lower than 2015, regardless of predicted traffic growth in this study. For trucks, free-flow emissions are expected to decrease by approximately 75 to 80% by 2025 and by approximately 85% by 2035 (see Table 3.2), with idling emissions not expected to be appreciably different. As a result, The Windsor-Essex Parkway which improves free-flow is better able to leverage improvements in emission levels than the No Build option.

Unless otherwise mentioned, results are discussed for the TEPA which includes the crossing and the Plaza as the air quality impacts near the crossing and Plaza are similar to that of The Windsor-Essex Parkway. References to The Windsor-Essex Parkway refer specifically to the highway and collector roads. Also, table headings referring to "Parkway" refer to The Windsor-Essex Parkway.

The relative risk of exposure to contaminants assessed in this report on a health basis is addressed in the *Human Health Risk Assessment December 2008 (HHRA)*. The *Social Impact Assessment, December 2008* discusses impacts at specific neighbourhoods.

4.1 Contaminant Specific Discussion

4.1.1 Contaminants Below Criteria

Several contaminants were either well below criteria or the transportation aspect of the concentrations was negligible relative to the background. Table 4.2 presents the maximum concentrations recorded at any receptor for both No Build and the TEPA. As can be seen in the table, contaminants are well below criteria. Results at sensitive receptors are presented in Appendix D. For most of these contaminants the background concentrations determine the overall air quality impact rather than the contribution from tailpipe emissions.

These contaminants are not discussed further in this report as their impacts are negligible. Any relative risk impacts that are health based related are discussed in the HHRA.

TABLE 4.2 – CONTAMINANTS SIGNIFICANTLY BELOW CRITERIA

Contaminant	Background concentration (ug/m^3)	Criteria, ug_m^3	Horizon Year	No Build Max, ug/m^3	TEPA Max, ug/m^3	Pct Change, TEPA to No Build	No Build Pct of criteria	TEPA Pct of criteria
Acetaldehyde 1 hr	2.4	500	2015	2.82	2.74	-3%	1%	1%
			2025	2.82	2.75	-2%	1%	1%
			2035	2.86	2.81	-2%	1%	1%
Acetaldehyde 24 hr	2.4	500	2015	2.50	2.48	-1%	0%	0%
			2025	2.49	2.48	0%	0%	0%
			2035	2.50	2.50	0%	1%	1%
CO - 1 hr	897	36,200	2015	2071	2127	3%	6%	6%
			2025	2057	2206	7%	6%	6%
			2035	2092	2333	12%	6%	6%
CO - 8 hr	897	15,700	2015	1281	1404	10%	8%	9%
			2025	1245	1439	16%	8%	9%
			2035	1265	1490	18%	8%	9%
Formaldehyde 24 hr	4.1	65	2015	4.34	4.30	-1%	7%	7%
			2025	4.33	4.30	-1%	7%	7%
			2035	4.36	4.35	0%	7%	7%
SO_x - 1 hr	43	690	2015	44.0	44.0	0%	6%	6%
			2025	44.1	44.2	0%	6%	6%
			2035	44.1	44.4	1%	6%	6%
SO_x 24 hr	43	275	2015	43.2	43.2	0%	16%	16%
			2025	43.3	43.3	0%	16%	16%
			2035	43.3	43.3	0%	16%	16%

4.4.2 Carbon Dioxide

Carbon dioxide (CO_2) is a greenhouse gas and generally not associated with health or short-term impacts that are typically considered with modelling. The roadway was not modelled for CO_2 impacts and instead, the annual contribution of the transportation network was considered.

According to the Emission Database for Global Atmospheric Research 584,578 kilotonnes (1 kilotonne = 1,000 tonnes or 1,000,000 kg) were released in Canada in the year 2000, of which 121,411 kilotonnes were from road transportation. The TEPA is expected to add approximately 200 kilotonnes to Canada's emissions (assuming 2000 levels remain constant until 2035), or 0.04% of the total emissions. The TEPA is not expected to have a significant contribution to global warming potential from CO_2 emissions. Calculation details are provided in Appendix E.

4.4.3 VOCs

VOCs can be considered a precursor gas to smog and global warming. As per

Table 2.4, transportation sources are responsible for about 1% of the total emissions from Ontario. According to the Environment Canada National Pollutant Release Inventory, the total VOC releases in Windsor from Industry are 6,675 tonnes in 2007. The TEPA is expected to release approximately 60 tonnes of VOCs in any of the horizon years, representing less than 1% of the contribution from existing VOC releases from Windsor Industry. As with CO_2, VOC contributions to global warming are expected to be very minor relative to total loading.

Because certain contaminants within VOCs are considered to have potential health impacts, VOCs were modelled as a general contaminant. Table 4.3 shows the modelled maximum results for VOCs. There currently are no criteria for VOCs and most of the focus on VOC reduction has been on the reduction of VOC use in commercial and industrial coatings. Natural VOC sources represent more than 90% of the total VOC emissions as indicated in the Environment Canada data presented in Table 2.4 and thus any controls for VOCs for anthropogenic sources are expected to have limited impact on ambient VOC concentrations.

TABLE 4.3 –MAXIMUM VOC CONCENTRATIONS

Contaminant	Background concentration (µg/m³)	Criteria, µg/m³	Horizon Year	No Build Max, µg/m³	TEPA Max, µg/m³	Pct Change, TEPA to No Build	No Build Contribution over background	TEPA Contribution over background
VOC 24 hr	147		2015	159	160	1%	8%	9%
			2025	157	159	1%	7%	8%
			2035	158	161	2%	8%	9%

4.4.4 Acrolein

Acrolein concentrations are predicted to be above criteria primarily because background concentrations are above the 24 hour criteria.

Acrolein is unstable and highly reactive and variability is high when testing is conducted at limits close to detection levels. There is some recent evidence that concentrations of acrolein increase relative to sample storage length as previously discussed.

The background chosen for this study was based on the Environment Canada sampling. Environment Canada uses the sorbent-filled cartridges. Some studies suggest that recovery of acrolein with this method can under-predict concentrations. The recent study by Environment Canada and University of Windsor indicates that acrolein has a significant seasonal variation as shown in Table 4.4. It would be very difficult to model a seasonal variation for background concentrations with the current complexity of the models.

TABLE 4.4 - ACROLEIN SEASONAL VARIATION IN CONCENTRATIONS

Indoor		Outdoor		Personal	
Winter	Summer	Winter	Summer	Winter	Summer

Acrolein, µg/m³	1.29	5.02	0.14	0.58	1.16	4.04

Using a lower concentration as background could under-predict any potential health impacts of the overall exposure to acrolein, however, it does not "mask" the impacts of the transportation corridor. The MOE 90th percentile background of 0.16 µg/m³ chosen for the analysis is consistent with an average winter outdoor exposure for acrolein. For the purposes of the air quality assessment, as all concentrations are above the AAQC, the choice of background is not as critical. The HHRA examines the relative risk impact of background and overall exposure.

Maximum concentrations are presented in Table 4.5. Maximum concentrations are predicted to reduce slightly with the TEPA, however the reduction is not considered appreciable.

TABLE 4.5 - MAXIMUM ACROLEIN CONCENTRATIONS

Contaminant	Background concentration, µg/m³	Criteria, µg/m³	Horizon Year	No Build Max, µg/m³	TEPA Max, µg/m³	Pct Change, TEPA to No Build	No Build Pct of criteria	TEPA Pct of criteria
Acrolein - 1/2 hr	0.16	0.24	2015	0.27	0.25	-7%	>100%	>100%
			2025	0.26	0.24	-6%	>100%	>100%
			2035	0.27	0.25	-5%	>100%	>100%
Acrolein 24 hr	0.16	0.08	2015	0.17	0.17	-1%	>100%	>100%
			2025	0.17	0.17	-1%	>100%	>100%
			2035	0.18	0.18	1%	>100%	>100%

Note: model results have been converted from a one hour averaging period to a half hour averaging period using the MOE correction factor of 1.2.

4.4.5 Benzene and 1,3 Butadiene

Benzene and 1,3 butadiene do not have established air quality criteria and both contaminants are under review by the MOE for standards setting within the next few years. Unlike acrolein, there does not appear to be a seasonal variability to benzene and 1,3 butadiene.

The maximum concentration for both contaminants are predicted to increase slightly relative to No Build but the increases are not considered to be appreciable (<10%) and are shown in Table 4.6.

The HHRA addresses the relative risk of these contaminants from a health based risk perspective.

TABLE 4.6 - MAXIMUM BENZENE AND 1,3 BUTADIENE CONCENTRATIONS

Contaminant	Background concentration, µg/m³	Criteria, µg/m³	Horizon Year	No Build Max, µg/m³	TEPA Max, µg/m³	Pct Change, TEPA to No Build	No Build Contribution over background	TEPA Contribution over background
Benzene 24 hr	2.7		2015	3.06	3.13	2%	13%	16%
			2025	2.99	3.11	4%	11%	15%
			2035	3.00	3.15	5%	11%	17%
1,3 Butadiene 24 hr	0.17		2015	0.21	0.22	2%	26%	29%
			2025	0.21	0.22	4%	23%	28%
			2035	0.21	0.22	6%	24%	31%

4.4.6 NO_x

The AAQC is a health based criteria for NO_2 but it is very conservatively considered as the combined total of NO (converted to NO_2) and NO_2.

The benefits to idling reductions are most apparent with NO_x. Even with increased traffic, the maximum concentrations for NO_x are reduced. As stated previously, differences of about 10% between each scenario can be considered negligible.

There are no exceedances predicted for NO_x 24-hour averaging period anywhere within The Windsor-Essex Parkway beyond the ROW Limits. Isolated instances of exceedances occur for NO_x 1-hour averaging period near Plaza B1, primarily due to increased idling. Table 4.7 shows both the maximum concentrations and the 90th percentile concentrations (i.e. concentrations will be lower than the 90th percentile concentrations 90% of the time) when receptors near Plaza B1 are excluded. This table illustrates that even with No Build, NO_x concentrations are typically expected to be below criteria. NO_x is marginally above the criteria for No Build at 2035 but only at one receptor for one hour near the Todd/Cabana intersection.

TABLE 4.7 – MAXIMUM NO_x CONCENTRATIONS UNDER NO BUILD AND THE WINDSOR-ESSEX PARKWAY

Contaminant	Year	Criteria, µg/m³	Max No Build, µg/m³	Max Parkway, µg/m³	Parkway Percent of No Build	Percent of Criteria, No Build	Percent of Criteria, Parkway	90th percent No Build, µg/m³	90th percent Parkway, µg/m³
NO_x 1 hr	2015	400	330	212	64%	83%	53%	114	91
	2025		314	209	67%	78%	52%	112	77
	2035		432	205	47%	108%	51%	123	77
NO_x 24 hr	2015	200	124	89	72%	62%	44%	96	75
	2025		121	76	63%	60%	38%	92	65
	2035		131	71	54%	65%	36%	99	65

As previously stated, changes in technology are expected to improve the air quality by reducing NO_x tailpipe emissions by 2025. This is not apparent with the table above as the maximums occur in different areas and on a 24 hour basis the background becomes the dominant contributor. In addition, traffic is expected to

increase by more than 20% from horizon year to horizon year. The most significant reductions occur closest to the roadway. To illustrate the decrease in concentrations, five receptors close to the roadway were chosen and the background concentration removed (Table 4.8). On average there is a 48% reduction in emissions for NO_x relating to tailpipe emissions between 2015 and 2025. There is a relatively minor reduction in emissions between 2025 and 2035 and the 2035 traffic increases offset the reduction in emission factors.

TABLE 4.8 - NO_x CONCENTRATION CHANGES OVER TIME

Receptor Number	Contaminant	Max Concentration, µg/m³			2025 pct of 2015	2035 pct of 2015
		2015	2025	2035		
75	NO_x 1 hr	93	45	46	48%	49%
	NO_x 24 hr	19	8	7	48%	49%
180	NO_x 1 hr	83	40	40	48%	49%
	NO_x 24 hr	17	7	6	48%	49%
695	NO_x 1 hr	51	24	25	48%	49%
	NO_x 24 hr	12	5	5	48%	49%
771	NO_x 1 hr	47	19	18	48%	49%
	NO_x 24 hr	10	4	3	48%	49%
786	NO_x 1 hr	86	33	29	48%	49%
	NO_x 24 hr	19	7	6	48%	49%

Near Plaza B1

NO_x concentrations are elevated relative to No Build near Plaza B1 but the concentrations are generally below the AAQC for 1 hr and are below the criteria for a 24 hour basis. Table 4.9 shows the maximum concentrations at the 10 highest receptors near Plaza B1 for the different horizon years. As can be seen in the table, concentrations approach background by the 90th percentile and there are only isolated instances of exceedances with fewer than 10 hours per year of exceedances at any one receptor.

This increase in concentration relative to No Build is due to the relatively low traffic volumes in the surrounding area under the No Build Conditions and the significant amount of idling expected to occur with trucks at the Plaza.

TABLE 4.9 – PLAZA NO_X 1- HOUR CONCENTRATIONS AT RECEPTORS

Receptor	Contaminant	Year	No Build Exceed, hrs	TEPA Exceed, hrs	No Build Max, µg/m³	TEPA Max, µg/m³	No Build 90th, µg/m³	TEPA 90th, µg/m³
1295	NO_x 1 hr	2015	0	2	87	487	65	75
1433			0	1	87	410	65	69
1151			0	0	88	375	65	77
1498			0	0	89	351	65	70
1432			0	0	86	333	65	69
1691			0	0	82	329	65	67
1219			0	0	89	320	65	71
1623			0	0	93	316	65	77
1363			0	0	89	315	65	70
1788			0	0	95	304	66	76
1151		2025	0	4	76	630	64	81
1295			0	7	76	627	64	82
1363			0	2	77	621	64	69
1219			0	2	77	533	64	71
1433			0	2	75	524	64	72
1437			0	4	74	502	64	69
1627			0	2	77	424	64	68
1623			0	3	78	421	65	78
1438			0	2	74	420	64	69
1432			0	1	75	416	64	71
1151		2035	0	9	76	704	64	81
1363			0	5	77	694	65	69
1295			0	3	76	563	64	80
1219			0	1	77	531	65	71
1627			0	2	77	473	65	67
1433			0	3	76	459	64	71
1364			0	1	76	450	65	66
1623			0	1	82	447	65	77
1691			0	1	75	441	64	65
1150			0	2	76	432	64	72
1151	NO_x 24 hr	2015	0	0	58	116	57	75
1151		2025	0	0	57	138	56	85
1151		2035	0	0	58	135	57	83

4.4.7 PM

Particulate matter emissions are primarily related to road dust generation. The TEPA increases traffic considerably relative to No Build, and concentrations of PM are expected to correspondingly increase. Tailpipe emissions form a relatively small percentage of the total particulate emissions unless idling becomes substantial as is evidenced at the Plaza.

To illustrate these statements, representative receptors were chosen for each of the major traffic segments. Table 4.10 shows the changes in concentrations relative to No Build and the correlating traffic changes. In general, as anticipated based on the nature of the U.S. EPA's emissions factors, there is a good correlation with traffic and PM concentrations. There are differences that occur

due to alignment of the road, ramp configurations, and tunnel portals (for example, with receptor 315) which can make the results not representative of traffic at all receptors.

PM concentrations drop significantly with distance. Companion receptors to the receptors listed in Table 4.10 included for PM for the year 2035 (the highest concentrations) and Table 4.11 shows the reduction in both exceedances and concentrations with increasing distances from the road. Some of the receptors are closer to a service road in this table and in this case the distance from road was taken between the service road and the 401.

While maximum concentrations of PM could occur up to the levels predicted, exceedances are considered likely to be over-predicted primarily due to three factors:

1. The calculation for road dust emissions does not consider precipitation which could have a cleansing effect on the roadways and reduce the road contribution to overall dusting. According to Environment Canada (see Table 2.1), Windsor experiences more than 140 days of precipitation per year.
2. When exceedances start to be predicted for more than 10% of the time (i.e., more than 36 days) then the 90th percentile background that is added to the modelling results artificially inflates the number of exceedances.
3. The model does not consider plume depletion. The mass of contaminant is considered the same across the modelling domain and as PM settles, the portion of PM that settles is not removed from the plume calculation. Concentrations and exceedances could be overestimated, particularly at receptors located further from the road sources.

Therefore, the number of exceedances is not a reliable indicator of actual exceedances that could occur due to the conservative nature of the modelling and the associated parameters above. Previous SENES studies for other projects that consider Highway 401 traffic have indicated that exceedances can be reduced by a factor of five or more for receptors closest to PM sources when plume depletion is considered [SENES 2005]. However, the change in exceedances between two scenarios is still a valid comparison, particularly when one alternative predicts significant differences in exceedances relative to the other scenario.

Both the TEPA and No Build Scenarios show frequent exceedances and elevated concentrations at some receptors. Exceedances and maximum concentrations are similar to each other in magnitude and the highest 50 concentrations and exceedances are presented in Table 4.12. As can be seen in the table, in general, while the maximum concentrations are higher for the TEPA, there are fewer exceedances predicted with the TEPA.

Table 4.13 shows the concentrations at sensitive receptors.

Some conclusions that can be drawn from the tables in this section are:

- Concentrations generally increase over time for both No Build and the TEPA.
- Concentrations for No Build are also expected to exceed the PM criteria.

PM concentrations at sensitive receptors are presented in Table 4.13 for the 2035 horizon year (the year of highest concentrations). PM concentrations and exceedances did not vary significantly within the five years of meteorological data. The data are presented in Appendix F.

As mentioned in Section 2.2, elevated concentrations of PM indicate a reduction in visibility. Concentrations of 150 µg/m^3 are representative of visibility of 8 km compared to a visibility of 10 km when concentrations are on the order of 120 µg/m^3.

Because PM is not considered a health based contaminant, the HHRA includes a very limited discussion on PM.

TABLE 4.10 – COMPARISON OF MAXIMUM PM CONCENTRATIONS AND TRAFFIC CHANGES

SECTION	Receptor	Year	No Build Exceed	Parkway Exceed	No Build Max, µg/m3	Parkway Max, µg/m3	Pct change	No Build with no background, µg/m3	Parkway with no background, µg/m3	Predicted change based on traffic	Pct change no bkg
Labelle to Grand	63	2015	185	143	180	172	-4%	96	88	18%	-8%
		2025	216	175	200	230	15%	116	146	34%	26%
		2035	239	181	220	258	17%	136	174	30%	28%
Grand Marais to Todd	181	2015	58	83	145	156	8%	61	72	12%	19%
		2025	92	107	156	174	11%	72	90	31%	25%
		2035	105	123	169	190	12%	85	106	27%	24%
Todd Cabana to	315	2015	0	43	116	146	26%	32	62	30%	92%
		2025	3	59	122	160	31%	38	76	48%	100%
		2035	16	73	128	173	35%	44	89	46%	101%
Huron Church to	686	2015	96	96	164	168	2%	80	84	44%	5%
		2025	144	111	184	176	-4%	100	92	73%	-8%
		2035	181	140	206	190	-8%	122	106	63%	-13%
Cousineau to Howard	701	2015	65	117	150	191	28%	66	107	61%	64%
		2025	97	132	164	217	32%	80	133	94%	66%
		2035	120	140	179	241	34%	95	157	85%	65%

TABLE 4.11 – COMPARISON OF MAXIMUM PM CONCENTRATIONS AND DISTANCE

SECTION	Receptor	Distance to Roadway	Year	No Build Exceed	Parkway Exceed	No Build Max, µg/m3	Parkway Max, µg/m3	Pct change with distance	No Build - BG	Parkway Max - BG	Pct change with distance
Labelle to Grand	63	75	2035	239	181	220	258		136	174	
	175	125	2035	166	160	168	190	-26%	84	106	-39%
	290	225	2035	54	98	137	152	-41%	53	68	-61%
Grand Marais to Todd	181	60	2035	105	123	169	190		85	106	
	296	160	2035	28	48	134	139	-27%	50	55	-48%
	411	260	2035	0	5	120	124	-35%	36	40	-62%
Todd Cabana to	315	100	2035	16	73	128	173		44	89	
	430	200	2035	0	3	116	124	-28%	32	40	-55%
	552	300	2035	0	0	109	115	-34%	25	31	-66%
Huron Church to	686	50	2035	181	140	206	190		122	106	
	753	100	2035	82	51	157	150	-21%	73	66	-38%
	822	200	2035	4	4	125	127	-33%	41	43	-60%
Cousineau to Howard	701	50	2035	120	140	179	241		95	157	
	770	100	2035	49	84	143	167	-31%	59	83	-47%
	839	200	2035	1	8	120	125	-48%	36	41	-74%

TABLE 4.12 – COMPARISON OF HIGHEST 50 MAXIMUM PM CONCENTRATIONS AND MAXIMUM EXCEEDANCES

	Exceedances, days									Maximum Concentration, µg/m3								
Rank	No Build 2015 PM	TEPA 2015 PM	TEPA/No Build	No Build 2025 PM	TEPA 2025 PM	TEPA/No Build	No Build 2035 PM	TEPA 2035 PM	TEPA/No Build	2015 No Build PM Max	2015 TEPA PM Max	TEPA/No Build	2025 No Build PM Max	2025 TEPA PM Max	TEPA/No Build	2035 No Build PM Max	2035 TEPA PM Max	TEPA/No Build
1	239	247	103%	254	276	109%	267	285	107%	224	240	107%	259	280	108%	298	325	109%
2	226	242	107%	249	271	109%	264	278	105%	224	240	107%	259	280	108%	298	325	109%
3	222	209	94%	240	243	101%	258	255	99%	223	239	107%	245	277	113%	273	315	116%
4	209	183	88%	233	217	93%	247	254	103%	223	239	107%	245	277	113%	273	315	116%
5	204	173	85%	232	214	92%	245	240	98%	202	233	116%	226	276	122%	249	312	125%
6	197	167	85%	231	211	91%	242	238	98%	202	233	116%	226	276	122%	249	312	125%
7	194	165	85%	222	209	94%	242	237	98%	197	231	118%	222	275	124%	245	310	127%
8	189	164	87%	222	203	91%	241	235	98%	197	231	118%	222	275	124%	245	310	127%
9	185	161	87%	216	195	90%	240	226	94%	196	224	114%	217	268	123%	241	306	127%
10	184	156	85%	216	191	88%	239	214	90%	196	224	114%	217	268	123%	241	306	127%
11	184	156	85%	215	185	86%	239	211	88%	195	216	111%	215	259	120%	239	302	126%
12	184	154	84%	214	182	85%	238	206	87%	195	216	111%	215	259	120%	239	302	126%
13	184	146	79%	213	180	85%	238	206	87%	193	213	110%	215	254	118%	237	297	125%
14	183	143	78%	208	178	86%	238	205	86%	193	213	110%	215	254	118%	237	297	125%
15	179	143	80%	208	178	86%	237	202	85%	193	213	110%	213	251	118%	235	296	126%
16	179	143	80%	207	177	86%	237	197	83%	193	213	110%	213	251	118%	235	296	126%
17	179	142	79%	207	177	86%	237	195	82%	193	213	110%	213	251	118%	234	279	119%
18	178	132	74%	207	175	85%	236	194	82%	193	213	110%	213	251	118%	234	279	119%
19	177	130	73%	205	175	85%	236	192	81%	193	210	109%	212	245	115%	233	272	117%
20	177	129	73%	205	175	85%	235	190	81%	193	210	109%	212	245	115%	233	272	117%
21	175	128	73%	205	173	84%	235	190	81%	191	208	109%	211	244	115%	232	270	116%
22	173	124	72%	202	173	86%	234	189	81%	190	206	108%	211	240	114%	232	266	115%
23	173	124	72%	201	172	86%	232	184	79%	189	202	107%	210	232	110%	232	258	111%
24	164	122	74%	186	172	92%	220	184	84%	189	200	106%	209	231	110%	232	256	110%
25	157	122	78%	179	169	94%	219	181	83%	188	199	106%	209	230	110%	231	254	110%
26	145	120	83%	176	168	95%	209	180	86%	188	199	106%	209	230	110%	231	254	110%
27	136	120	88%	174	166	95%	202	180	89%	187	195	104%	209	229	110%	231	251	109%
28	136	119	88%	174	165	95%	201	179	89%	187	195	104%	208	228	109%	231	249	108%
29	135	117	87%	173	165	95%	201	179	89%	186	194	104%	207	227	110%	231	248	108%
30	135	117	87%	173	161	93%	199	178	89%	186	193	103%	207	226	109%	230	247	107%
31	134	116	87%	171	161	94%	199	178	89%	185	191	103%	206	226	110%	229	247	108%
32	133	115	86%	170	161	95%	198	178	90%	185	188	102%	205	225	110%	228	246	108%
33	133	114	86%	170	160	94%	197	177	90%	184	188	102%	204	225	110%	228	245	108%
34	133	113	85%	167	160	96%	197	175	89%	184	187	102%	204	224	110%	226	245	108%
35	132	112	85%	166	159	96%	193	174	90%	184	187	102%	204	224	110%	226	244	108%
36	131	110	84%	166	157	95%	193	174	90%	183	187	102%	203	224	110%	225	243	108%
37	130	109	84%	165	156	95%	193	173	90%	183	186	101%	202	222	110%	224	242	108%
38	129	109	84%	165	156	95%	192	171	89%	182	186	102%	200	220	110%	222	241	109%
39	129	108	84%	165	155	94%	191	170	89%	182	184	101%	200	220	110%	221	241	109%
40	129	106	82%	165	152	92%	190	166	87%	180	181	100%	200	218	109%	220	240	109%
41	128	106	83%	164	151	92%	190	166	87%	180	181	100%	200	217	109%	220	239	109%
42	128	106	83%	163	151	93%	188	165	88%	180	180	100%	199	215	108%	219	239	109%
43	127	105	83%	163	150	92%	188	165	88%	180	179	100%	199	215	108%	218	236	108%
44	126	105	83%	162	149	92%	187	165	88%	180	179	100%	199	215	108%	217	234	108%
45	126	104	83%	160	148	93%	186	164	88%	179	179	100%	198	212	107%	217	234	108%
46	126	101	80%	160	147	92%	184	162	88%	179	178	99%	197	212	107%	216	234	108%
47	125	101	81%	159	144	91%	183	162	89%	178	177	100%	195	212	108%	215	233	108%
48	125	101	81%	156	144	92%	182	160	88%	177	177	100%	195	211	108%	215	233	108%
49	124	101	81%	156	143	92%	182	160	88%	177	177	100%	195	211	108%	214	233	108%
50	123	100	81%	156	143	92%	181	160	88%	176	177	101%	195	210	108%	214	232	109%

TABLE 4.13 – PM CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2035 HORIZON YEAR

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	PM 24 hr	120	84	2035	247	174	-73	230	222	-4%	191	161	-16%
Mangin Cr	Residential	PM 24 hr	120	84	2035	239	181	-58	220	258	17%	182	197	8%
Northway and Norfolk - closest to ROW	Norfolk	PM 24 hr	120	84	2035	235	178	-57	213	206	-3%	177	169	-5%
Northway and Norfolk - closest to ROW	Norfolk	PM 24 hr	120	84	2035	236	180	-56	212	205	-3%	177	167	-5%
St. Cecile Academic Music - Grand Marais	School	PM 24 hr	120	84	2035	168	158	-10	168	190	13%	147	150	2%
Lambton - closest to ROW	Residential	PM 24 hr	120	84	2035	105	123	18	169	190	12%	141	154	9%
Northway and Norfolk - middle of neighbourhood	Residential	PM 24 hr	120	84	2035	148	135	-13	162	166	3%	142	139	-2%
Bellewood Estates	Residential	PM 24 hr	120	84	2035	50	77	27	133	173	30%	122	128	5%
Lambton - 150 m from ROW	Residential	PM 24 hr	120	84	2035	31	52	21	134	141	5%	119	122	3%
Bellewood Estates	Residential	PM 24 hr	120	84	2035	1	19	18	120	151	26%	112	116	4%
Huron Estates	Residential	PM 24 hr	120	84	2035	0	3	3	120	123	3%	109	111	2%
Reddock	Residential	PM 24 hr	120	84	2035	1	6	5	123	131	6%	109	111	1%
10th and Todd	Residential	PM 24 hr	120	84	2035	1	24	23	124	141	14%	109	115	6%
Hearthwood - within 50 m of ROW	Residential	PM 24 hr	120	84	2035	117	107	-10	176	191	8%	146	152	4%
Villa Borghese	Residential	PM 24 hr	120	84	2035	83	46	-37	157	142	-10%	129	121	-6%
Kendleton Court	Residential	PM 24 hr	120	84	2035	88	155	67	153	191	25%	128	155	21%
Villa Borghese	Residential	PM 24 hr	120	84	2035	4	2	-2	124	122	-2%	111	109	-1%
Villa Borghese	Residential	PM 24 hr	120	84	2035	5	1	-4	122	123	1%	112	108	-4%
Hearthwood - within 100 m of ROW	Residential	PM 24 hr	120	84	2035	0	5	5	118	128	9%	106	110	3%
Villa Paradiso	Residential	PM 24 hr	120	84	2035	2	22	20	122	149	22%	109	117	8%
Grosvenor to Croydon	Residential	PM 24 hr	120	84	2035	0	56	56	112	158	41%	105	127	21%
Alpen Rose	Residential	PM 24 hr	120	84	2035	0	4	4	114	124	9%	103	111	7%
Heritage Estates	Residential	PM 24 hr	120	84	2035	0	0	0	108	111	3%	100	105	5%
Royal Oak Senior Home	Home	PM 24 hr	120	84	2035	0	0	0	108	112	3%	100	101	1%
Royal Oak Senior Home	Home	PM 24 hr	120	84	2035	0	0	0	109	113	4%	99	100	1%
Spring Garden	Residential	PM 24 hr	120	84	2035	0	70	70	113	145	29%	103	128	24%
Spring Garden	Residential	PM 24 hr	120	84	2035	0	63	63	117	141	21%	106	126	19%
Spring Garden	Residential	PM 24 hr	120	84	2035	19	77	58	133	150	13%	115	130	13%
Association for Persons with Physical Disabilities	Special Needs	PM 24 hr	120	84	2035	0	18	18	117	131	11%	106	116	9%
Armanda	Residential	PM 24 hr	120	84	2035	0	0	0	99	120	21%	95	111	17%
Chelsea	Residential	PM 24 hr	120	84	2035	20	64	44	131	198	51%	116	135	16%
Broadway Park	Parkland	PM 24 hr	120	84	2035	0	91	91	96	170	77%	92	142	55%
Ojibway Park	Parkland	PM 24 hr	120	84	2035	0	0	0	93	111	20%	90	98	9%
Malden Park	Parkland	PM 24 hr	120	84	2035	0	6	6	102	127	25%	96	113	18%
Victoria Memorial Park	Parkland	PM 24 hr	120	84	2035	0	0	0	95	114	20%	89	99	12%
Sandwich First Baptist	Church	PM 24 hr	120	84	2035	0	0	0	108	103	-5%	99	95	-4%
A-Unknown Church	Church	PM 24 hr	120	84	2035	4	0	-4	123	103	-16%	111	95	-15%
Museum Land Mark	Museum	PM 24 hr	120	84	2035	0	0	0	109	103	-6%	99	95	-5%
Indian Memorial Park	Parkland	PM 24 hr	120	84	2035	188	135	-53	190	182	-4%	157	147	-6%
Bellwood Park	Parkland	PM 24 hr	120	84	2035	4	18	14	124	141	13%	113	117	4%
Beals Park	Parkland	PM 24 hr	120	84	2035	0	0	0	116	115	-1%	108	104	-3%
Oakwood Public School	School	PM 24 hr	120	84	2035	6	0	-6	127	115	-9%	114	107	-6%
Oakwood Bible Chapel	Church	PM 24 hr	120	84	2035	60	3	-57	142	130	-9%	124	113	-9%
C-Unknown Church	Church	PM 24 hr	120	84	2035	106	30	-76	153	138	-10%	132	119	-9%
Our Lady Of Mount Caramel Separate School	School	PM 24 hr	120	84	2035	19	50	31	135	140	3%	117	122	4%
Our Lady Of Mount Caramel Catholic Church	Church	PM 24 hr	120	84	2035	4	5	1	128	127	-1%	112	112	0%
Veteren Memorial Park	Parkland	PM 24 hr	120	84	2035	0	0	0	109	118	8%	99	103	4%
St Charbel Maronite Catholic Church	Church	PM 24 hr	120	84	2035	0	18	18	110	134	22%	96	115	19%
1- Unknown - Park & Golf Course	Golf Course	PM 24 hr	120	84	2035	0	0	0	95	108	14%	88	97	10%
St Stevens cemetery	Cemetery	PM 24 hr	120	84	2035	0	0	0	94	104	11%	87	95	9%
St Stevens Church	Church	PM 24 hr	120	84	2035	0	0	0	94	114	21%	87	98	12%
Sikh Cultural Society	Centre	PM 24 hr	120	84	2035	0	0	0	105	113	8%	99	104	5%
Apostolic Christ Church	Church	PM 24 hr	120	84	2035	0	0	0	101	112	11%	97	102	5%
Heavenly Rest Cemetery	Cemetery	PM 24 hr	120	84	2035	0	0	0	96	106	11%	92	99	7%
St. Nicholas Macedonian Easter	Church	PM 24 hr	120	84	2035	0	0	0	100	111	11%	96	101	5%
D-Unknown Church	Church	PM 24 hr	120	84	2035	0	0	0	107	110	3%	96	100	5%
J.Jenner Park	Parkland	PM 24 hr	120	84	2035	0	0	0	108	119	10%	101	108	7%
Heritage Park	Parkland	PM 24 hr	120	84	2035	0	0	0	107	116	9%	100	107	7%
St Clair Park	Parkland	PM 24 hr	120	84	2035	0	0	0	114	116	2%	101	105	3%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	PM 24 hr	120	84	2035	63	81	18	152	159	4%	126	130	3%
St Clair College	School	PM 24 hr	120	84	2035	0	0	0	113	119	4%	103	104	2%
Bellwood Public School	School	PM 24 hr	120	84	2035	1	5	4	120	135	13%	110	114	4%
Ecole Monseigneur Jean-Noel	School	PM 24 hr	120	84	2035	0	0	0	112	117	5%	104	104	0%
B-Unknown Church	Church	PM 24 hr	120	84	2035	0	0	0	116	113	-2%	106	103	-3%

Note: cells in orange represent concentrations greater than criteria. Cells highlighted in yellow indicate changes greater than 10% which would be considered notable changes.

4.4.8 PM_{10}

PM_{10} emissions are primarily related to road dust generation. The TEPA increases traffic considerably relative to No Build and concentrations of PM_{10} are expected to correspondingly increase. Tailpipe emissions form a relatively small percentage of the PM_{10} emissions unless idling becomes substantial as is evidenced at the Plaza.

PM_{10} follows a similar trend to PM although the differences between the TEPA and No Build are less extreme than with PM. As with the other contaminants, PM_{10} concentrations are elevated near the Plaza and exceedances are predicted for a larger portion of the year near the Plaza than they are with No Build in general. The exceedances and elevated concentrations are due to the increased idling that occurs with the trucks (see Table 4.14 and Table 4.15).

The correlation with traffic is not as apparent with PM_{10} as it is with PM nor is the reduction over distance as shown in Tables 4.16 and 4.17.

Exceedances are predicted for both No Build and for the TEPA but the number of exceedances is likely conservative as no reductions are taken for precipitation, the 90th percentile background, and there is a lack of consideration of plume depletion as previously stated for PM concentrations.

Both the TEPA and No Build scenarios show frequent exceedances and elevated concentrations at some receptors. Exceedances and maximum concentrations are similar to each other in magnitude and the highest 50 concentrations and exceedances are presented in Table 4.18. As can be seen in the table, in general, while the maximum concentrations are higher for the TEPA, there are fewer exceedances predicted with the TEPA.

Table 4.19 shows the concentrations at sensitive receptors.

Some conclusions that can be drawn from the tables in this section are:

- Concentrations generally increase over time at the same receptors for both No Build and the TEPA, however, the change is generally not appreciable (i.e., changes are less than 10%).
- Concentrations for No Build are also expected to exceed the PM_{10} criteria.

PM_{10} concentrations at sensitive receptors for the 2035 horizon year are presented in Table 4.19. PM_{10} concentrations and exceedances did not vary significantly within the five years of meteorological data. The data are presented in Appendix F.

Because PM_{10} is not considered a health based risk contaminant, the HHRA contains only a limited discussion on PM_{10}.

TABLE 4.14 – THE WINDSOR-ESSEX PARKWAY PM_{10} CONCENTRATIONS EXCLUDING NEAR THE PLAZA AND COMPARISON TO NO BUILD

Contaminant	Year	No Build Max Exceed, days	Parkway Max Exceed, days	No Build Max Concentration, µg/m³	Parkway Max Concentration, µg/m³	No Build 90th percentile, µg/m³	Parkway 90th percentile, µg/m³
PM_{10}	2015	238	164	92	85	64	64
	2025	257	196	104	98	70	71
	2035	273	234	114	114	74	79

TABLE 4.15 – PM_{10} CONCENTRATIONS NEAR THE PLAZA

Contaminant	Year	No Build Max Exceed, days	TEPA Max Exceed, days	No Build Max Concentration, µg/m³	TEPA Max Concentration, µg/m³	No Build 90th percentile, µg/m³	TEPA 90th percentile, µg/m³
PM_{10}	2015	3	251	50	92	46	66
	2025	7	276	52	102	47	72
	2035	9	291	53	112	47	77

TABLE 4.16 - COMPARISON OF PM_{10} CONCENTRATIONS RELATIVE TO NO BUILD AND EXPECTED TRAFFIC INCREASES

SECTION	Receptor	Year	No Build Exceed	Parkway Exceed	No Build Max, µg/m³	Parkway Max, µg/m³	Pct change	No Build with no background, µg/m³	Parkway with no background, µg/m³	Predicted change based on traffic	Pct change no bkg
Labelle to Grand Marais	63	2015	183	133	77	69	-10%	35	27	18%	-23%
		2025	223	173	84	80	-5%	42	38	34%	-10%
		2035	240	183	92	87	-5%	50	45	30%	-10%
Grand Marais to Todd Cabana	181	2015	76	82	61	62	1%	19	20	12%	4%
		2025	105	116	65	67	3%	23	25	31%	8%
		2035	128	130	69	71	2%	27	29	27%	6%
Todd Cabana to Huron Church	315	2015	13	44	53	62	16%	11	20	30%	79%
		2025	26	59	56	66	18%	14	24	48%	74%
		2035	44	78	58	70	21%	16	28	46%	76%
Huron Church to Cousineau	686	2015	110	89	66	64	-3%	24	22	44%	-9%
		2025	157	100	72	66	-9%	30	24	73%	-21%
		2035	191	127	79	70	-12%	37	28	63%	-25%
Cousineau to Howard	701	2015	72	112	61	66	10%	19	24	61%	31%
		2025	106	133	65	73	12%	23	31	94%	34%
		2035	130	139	69	78	12%	27	36	85%	32%

TABLE 4.17 - COMPARISON OF REDUCTIONS OVER DISTANCE

SECTION	Receptor	Distance to Roadway	Year	No Build Exceed, days	Parkway Exceed, days	No Build Max, µg/m³	Parkway Max, µg/m³	Pct change with distance	No Build – BG, µg/m³	Parkway Max – BG, µg/m³	Pct change with distance
Labelle to Grand Marais	63	75	2035	240	183	92	87		50	45	
	175	125	2035	177	157	74	72	-18%	32	30	-34%
	290	225	2035	128	130	69	71	-19%	27	29	-37%
Grand Marais to Todd Cabana	181	60	2035	84	105	61	61		19	19	
	296	160	2035	57	57	59	59	-4%	17	17	-12%
	411	260	2035	44	78	58	70	15%	16	28	48%
Todd Cabana to Huron Church	315	100	2035	23	21	56	55		14	13	
	430	200	2035	13	18	54	55	1%	12	13	4%
	552	300	2035	2	3	51	52	-5%	9	10	-20%
Huron Church to Cousineau	686	50	2035	191	127	79	70		37	28	
	753	100	2035	130	139	69	78	12%	27	36	30%
	822	200	2035	107	63	66	61	-13%	24	19	-32%
Cousineau to Howard	701	50	2035	63	84	60	63		18	21	
	770	100	2035	25	18	57	55	-12%	15	13	-36%
	839	200	2035	11	15	54	55	-12%	12	13	-37%

TABLE 4.18 – PM_{10} HIGHEST 50 EXCEEDANCES AND CONCENTRATIONS

	Exceedances, days									Maximum Concentration, µg/m3								
Rank	No Build 2015 PM10	TEPA 2015 PM10	TEPA No Build	No Build 2025 PM10	TEPA 2025 PM10	TEPA/No Build	No Build 2035 PM10	TEPA 2035 PM10	TEPA/No Build	2015 No Build PM10 Max	TEPA PM10 2015 Max	TEPA/No Build	2025 No Build PM10 Max	TEPA PM10 2025 Max	TEPA/No Build	2035 No Build PM10 Max	TEPA PM10 2035 Max	TEPA/No Build
1	238	251	105%	257	276	107%	273	291	107%	92	92	100%	104	102	98%	114	114	100%
2	217	249	115%	249	276	111%	269	287	107%	92	92	100%	104	102	98%	114	114	100%
3	215	216	100%	247	245	99%	261	264	101%	82	91	111%	91	101	112%	101	112	110%
4	212	192	91%	237	230	97%	253	255	101%	82	91	111%	91	101	112%	101	112	110%
5	200	182	91%	231	223	97%	252	247	98%	80	89	110%	91	99	109%	97	110	113%
6	194	177	91%	226	222	98%	250	246	98%	80	89	110%	91	99	109%	97	110	113%
7	193	164	85%	224	198	88%	249	234	94%	79	88	111%	88	98	112%	95	109	115%
8	192	161	84%	224	196	88%	242	225	93%	79	88	111%	88	98	112%	95	109	115%
9	186	155	83%	223	195	87%	241	219	91%	79	88	111%	87	97	112%	94	107	114%
10	185	148	80%	223	189	85%	241	217	90%	79	88	111%	87	97	112%	94	107	114%
11	184	147	80%	222	188	85%	240	217	90%	78	85	109%	86	95	110%	93	103	111%
12	184	147	80%	222	186	84%	240	217	90%	78	85	109%	86	95	110%	93	103	111%
13	183	146	80%	218	186	85%	240	216	90%	78	84	108%	86	94	109%	93	103	111%
14	182	146	80%	217	184	85%	240	208	87%	78	84	108%	86	94	109%	93	103	111%
15	181	141	78%	216	181	84%	239	201	84%	78	83	107%	84	94	111%	92	103	111%
16	181	141	78%	216	180	83%	239	199	83%	78	83	107%	84	94	111%	92	103	111%
17	180	139	77%	216	179	83%	239	199	83%	78	81	104%	84	93	111%	92	102	111%
18	180	134	74%	214	178	83%	238	193	81%	78	81	104%	84	93	111%	92	102	111%
19	179	133	74%	213	175	82%	238	192	81%	77	77	100%	84	92	109%	92	102	111%
20	178	132	74%	212	173	82%	238	189	79%	77	77	100%	84	92	109%	92	102	111%
21	177	132	75%	211	173	82%	236	188	80%	77	77	100%	84	87	103%	92	101	109%
22	175	131	75%	208	172	83%	236	188	80%	77	76	99%	84	85	101%	90	94	104%
23	175	127	73%	208	172	83%	236	188	80%	77	76	99%	83	84	101%	90	93	104%
24	166	122	73%	194	171	88%	230	187	81%	76	75	99%	83	84	101%	90	92	102%
25	164	119	73%	192	171	89%	227	186	82%	76	75	99%	83	84	101%	89	91	102%
26	155	119	77%	190	168	88%	218	184	84%	75	75	99%	82	84	101%	89	91	102%
27	147	119	81%	187	166	89%	218	183	84%	75	74	98%	82	83	101%	89	91	102%
28	143	118	83%	186	163	88%	215	183	85%	75	73	97%	82	82	100%	89	90	101%
29	143	117	82%	186	163	88%	211	180	85%	75	72	96%	82	82	100%	89	90	100%
30	142	115	81%	185	162	88%	211	180	85%	75	72	96%	82	82	100%	89	89	100%
31	142	115	81%	181	161	89%	210	179	85%	75	72	96%	82	82	100%	88	89	100%
32	141	115	82%	181	161	89%	210	178	85%	74	72	97%	82	81	100%	88	89	101%
33	140	113	81%	180	160	89%	209	178	85%	74	71	96%	82	81	100%	88	88	100%
34	140	112	80%	180	159	88%	209	177	85%	74	71	95%	82	81	100%	88	88	100%
35	140	110	79%	179	157	88%	209	177	85%	74	71	96%	81	81	100%	88	88	100%
36	139	110	79%	179	156	87%	205	175	85%	74	70	95%	81	81	100%	87	87	100%
37	139	108	78%	178	156	88%	204	174	85%	73	70	96%	81	81	100%	87	87	99%
38	138	106	77%	178	154	87%	202	173	86%	73	70	96%	81	80	99%	87	86	99%
39	138	105	76%	178	152	85%	202	173	86%	73	70	96%	80	80	100%	87	86	100%
40	138	103	75%	175	152	87%	201	173	86%	73	70	96%	80	80	100%	86	86	100%
41	138	103	75%	172	152	88%	201	172	86%	73	70	96%	80	80	100%	86	86	100%
42	138	102	74%	172	150	87%	195	171	88%	72	69	96%	80	80	100%	86	86	100%
43	138	102	74%	172	149	87%	194	168	87%	72	69	96%	80	80	100%	86	86	100%
44	138	101	73%	171	149	87%	193	167	87%	72	69	96%	80	79	100%	86	86	100%
45	137	101	74%	171	148	87%	193	167	87%	72	69	96%	79	79	100%	86	85	98%
46	137	101	74%	169	147	87%	192	166	86%	72	69	96%	79	79	99%	86	85	99%
47	137	100	73%	169	146	86%	192	165	86%	72	69	96%	79	79	99%	86	84	99%
48	136	100	74%	168	146	87%	192	165	86%	72	69	95%	79	79	99%	85	84	98%
49	135	100	74%	168	145	86%	191	163	85%	72	68	95%	79	78	99%	85	84	98%
50	135	99	73%	168	144	86%	191	163	85%	72	68	95%	79	78	99%	85	83	98%

TABLE 4.19 – CONCENTRATIONS AND EXCEEDANCES OF PM_{10} AT SENSITIVE RECEPTORS.

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	PM10 24 hr	50	42	2035	253	171	-82	93	78	-16%	68	60	-12%
Mangin Cr	Residential	PM10 24 hr	50	42	2035	240	183	-57	92	87	-5%	66	69	3%
Northway and Norfolk - closest to ROW	Norfolk	PM10 24 hr	50	42	2035	236	180	-56	89	75	-16%	64	61	-5%
Northway and Norfolk - closest to ROW	Norfolk	PM10 24 hr	50	42	2035	236	178	-58	89	78	-13%	65	61	-6%
St. Cecile Academic Music - Grand Marais	School	PM10 24 hr	50	42	2035	176	159	-17	74	71	-5%	58	58	0%
Lambton - closest to ROW	Residential	PM10 24 hr	50	42	2035	128	130	2	69	71	2%	57	59	3%
Northway and Norfolk - middle of neighbourhood	Residential	PM10 24 hr	50	42	2035	161	134	-27	72	64	-11%	57	55	-3%
Bellewood Estates	Residential	PM10 24 hr	50	42	2035	84	85	1	61	66	8%	52	53	2%
Lambton - 150 m from ROW	Residential	PM10 24 hr	50	42	2035	57	60	3	60	60	2%	52	51	-1%
Bellewood Estates	Residential	PM10 24 hr	50	42	2035	26	37	11	56	61	10%	49	50	1%
Huron Estates	Residential	PM10 24 hr	50	42	2035	26	23	-3	56	55	-1%	49	49	-1%
Reddock	Residential	PM10 24 hr	50	42	2035	27	20	-7	56	57	2%	49	49	-1%
10th and Todd	Residential	PM10 24 hr	50	42	2035	21	27	6	55	58	5%	49	49	1%
Hearthwood - within 50 m of ROW	Residential	PM10 24 hr	50	42	2035	123	105	-18	68	72	5%	57	57	1%
Villa Borghese	Residential	PM10 24 hr	50	42	2035	109	50	-59	66	59	-11%	54	51	-6%
Kendleton Court	Residential	PM10 24 hr	50	42	2035	107	152	45	64	69	7%	54	58	9%
Villa Borghese	Residential	PM10 24 hr	50	42	2035	26	11	-15	57	54	-6%	50	48	-3%
Villa Borghese	Residential	PM10 24 hr	50	42	2035	30	9	-21	57	55	-3%	50	48	-4%
Hearthwood - within 100 m of ROW	Residential	PM10 24 hr	50	42	2035	10	15	5	54	56	4%	48	48	1%
Villa Paradiso	Residential	PM10 24 hr	50	42	2035	19	39	20	56	62	10%	49	50	2%
Grosvenor to Croydon	Residential	PM10 24 hr	50	42	2035	1	61	60	52	66	27%	47	53	11%
Alpen Rose	Residential	PM10 24 hr	50	42	2035	5	15	10	52	56	8%	47	49	3%
Heritage Estates	Residential	PM10 24 hr	50	42	2035	1	4	3	50	51	2%	46	47	2%
Royal Oak Senior Home	Home	PM10 24 hr	50	42	2035	0	1	1	50	50	1%	46	46	-1%
Royal Oak Senior Home	Home	PM10 24 hr	50	42	2035	1	3	2	50	50	0%	46	46	-2%
Spring Garden	Residential	PM10 24 hr	50	42	2035	4	83	79	53	61	15%	47	53	13%
Spring Garden	Residential	PM10 24 hr	50	42	2035	7	76	69	54	61	11%	48	52	10%
Spring Garden	Residential	PM10 24 hr	50	42	2035	39	85	46	56	61	8%	50	54	7%
Association for Persons with Physical Disabilities	Special Needs	PM10 24 hr	50	42	2035	6	38	32	53	55	5%	48	50	5%
Armanda	Residential	PM10 24 hr	50	42	2035	0	20	20	49	54	11%	45	49	9%
Chelsea	Residential	PM10 24 hr	50	42	2035	39	69	30	57	68	20%	50	54	8%
Broadway Park	Parkland	PM10 24 hr	50	42	2035	0	99	99	47	65	39%	44	56	28%
Ojibway Park	Parkland	PM10 24 hr	50	42	2035	0	0	0	46	50	9%	44	46	5%
Malden Park	Parkland	PM10 24 hr	50	42	2035	1	30	29	50	59	17%	46	50	9%
Victoria Memorial Park	Parkland	PM10 24 hr	50	42	2035	0	0	0	45	50	11%	43	45	6%
Sandwich First Baptist	Church	PM10 24 hr	50	42	2035	0	0	0	50	49	-3%	46	45	-3%
A-Unknown Church	Church	PM10 24 hr	50	42	2035	18	0	-18	55	49	-11%	49	45	-8%
Museum Land Mark	Museum	PM10 24 hr	50	42	2035	1	0	-1	50	49	-3%	46	45	-3%
Indian Memorial Park	Parkland	PM10 24 hr	50	42	2035	189	126	-63	77	74	-4%	60	57	-5%
Bellwood Park	Parkland	PM10 24 hr	50	42	2035	33	36	3	55	59	6%	50	50	1%
Beals Park	Parkland	PM10 24 hr	50	42	2035	13	2	-11	53	52	-2%	48	47	-2%
Oakwood Public School	School	PM10 24 hr	50	42	2035	37	6	-31	56	52	-6%	50	47	-5%
Oakwood Bible Chapel	Church	PM10 24 hr	50	42	2035	92	17	-75	60	54	-9%	52	49	-6%
C-Unknown Church	Church	PM10 24 hr	50	42	2035	126	38	-88	62	56	-10%	54	50	-7%
Our Lady Of Mount Caramel Separate School	School	PM10 24 hr	50	42	2035	42	60	18	59	58	-1%	50	51	2%
Our Lady Of Mount Caramel Catholic Church	Church	PM10 24 hr	50	42	2035	18	18	0	57	54	-4%	49	49	0%
Veteren Memorial Park	Parkland	PM10 24 hr	50	42	2035	2	4	2	51	52	3%	46	47	1%
St Charbel Maronite Catholic Church	Church	PM10 24 hr	50	42	2035	0	27	27	49	59	20%	45	49	10%
1- Unknown - Park & Golf Course	Golf Course	PM10 24 hr	50	42	2035	0	1	1	45	50	12%	43	45	5%
St Stevens cemetery	Cemetery	PM10 24 hr	50	42	2035	0	0	0	45	47	4%	43	44	3%
St Stevens Church	Church	PM10 24 hr	50	42	2035	0	0	0	45	49	8%	43	45	4%
Sikh Cultural Society	Centre	PM10 24 hr	50	42	2035	0	0	0	48	49	2%	46	46	2%
Apostolic Christ Church	Church	PM10 24 hr	50	42	2035	0	0	0	47	49	4%	45	46	2%
Heavenly Rest Cemetery	Cemetery	PM10 24 hr	50	42	2035	0	0	0	46	49	7%	44	45	3%
St. Nicholas Macedonian Easter	Church	PM10 24 hr	50	42	2035	0	0	0	47	49	5%	45	46	2%
D-Unknown Church	Church	PM10 24 hr	50	42	2035	0	0	0	49	49	1%	45	46	2%
J.Jenner Park	Parkland	PM10 24 hr	50	42	2035	0	7	7	49	54	10%	47	48	3%
Heritage Park	Parkland	PM10 24 hr	50	42	2035	1	7	6	50	53	5%	46	48	3%
St Clair Park	Parkland	PM10 24 hr	50	42	2035	4	4	0	51	51	1%	47	47	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	PM10 24 hr	50	42	2035	90	86	-4	65	64	-2%	53	53	0%
St Clair College	School	PM10 24 hr	50	42	2035	5	7	2	54	54	0%	47	47	0%
Bellwood Public School	School	PM10 24 hr	50	42	2035	19	23	4	54	57	6%	49	49	0%
Ecole Monseigneur Jean-Noel	School	PM10 24 hr	50	42	2035	5	2	-3	51	52	1%	47	47	-1%
B-Unknown Church	Church	PM10 24 hr	50	42	2035	9	1	-8	53	51	-3%	48	47	-3%

Note: cells in orange represent concentrations greater than criteria. Cells highlighted in yellow indicate changes greater than 10% which would be considered notable changes.

4.4.9 $PM_{2.5}$

$PM_{2.5}$ concentrations are typically not expected to exceed the Canada Wide Standard (CWS) and changes between the TEPA and No Build scenarios are generally within 10% of each other except in locations where significant additional traffic is increased (Plaza B1). $PM_{2.5}$ concentrations are predicted to be below the CWS.

According to the MOE Windsor Traffic Study [MOE 2004], during normal traffic flows increases in $PM_{2.5}$ concentrations are minimal. This is supported by the modelling results. Maximum concentrations are presented in Table 4.20. Concentrations of $PM_{2.5}$ at sensitive receptors are presented in Appendix D.

The HHRA addresses the risk impact of $PM_{2.5}$ concentrations on health.

TABLE 4.20 - $PM_{2.5}$ 24-HOUR CONCENTRATIONS (INCLUDES NEAR PLAZA B1)

Contaminant	Year	No Build Max Concentration, µg/m^3	TEPA Max Concentration, µg/m^3	No Build 90th percentile, µg/m^3	TEPA 90th percentile, µg/m^3	No Build Average, µg/m^3	TEPA Average, µg/m^3
PM25	2015	24	28	22	24	22	22
	2025	24	29	23	25	22	23
	2035	26	30	23	25	22	23

4.4.10 PAHs

As discussed in Section 2, PAHs were not modelled as emission factors do not exist for PAHs. Instead, naphthalene emission factors were considered as a surrogate for PAHs. AAQCs also do not exist for PAHs but the naphthalene AAQC is 22.5 µg/m^3 for a 24 hour averaging period. Average background concentrations for naphthalene in Windsor are approximately 1 µg/m^3.

The naphthalene emission factors are in the same order of magnitude as 1,3 butadiene emission factors and are presented in Table 4.21. Section 4.4.5 indicated that maximum tailpipe emissions add approximately 0.05 µg/m^3 to ambient conditions for 1,3 butadiene. Naphthalene concentrations could be expected to be in the same order of magnitude for background contributions. The maximum concentrations from tailpipe emissions would be less than 1% of the AAQC and would be less than 10% of the background concentrations. Therefore, naphthalene was not modelled.

TABLE 4.21 – CAR AND TRUCK NAPHTHALENE EMISSION FACTORS

Cars

Tailpipe Emission Factor, g/vkt

	Speed, km/hr	Naphthalene	PM_{10}	$PM_{2.5}$	Pct of PM_{10}	Pct of $PM_{2.5}$	1,3 butadiene	Pct of 1,3 butadiene
2015	25	0.00031	0.00398	0.00210	8%	15%	0.00123	25%
	50	0.00029	0.00399	0.00213	7%	14%	0.00095	31%
	75	0.00029	0.00399	0.00213	7%	14%	0.00093	31%
	100	0.00029	0.00399	0.00213	7%	14%	0.00093	31%
	Idle	0.00165	0.01610	0.00860	10%	19%	0.00583	28%
2025	25	0.00027	0.00345	0.00162	8%	17%	0.00100	27%
	50	0.00025	0.00347	0.00163	7%	16%	0.00078	33%
	75	0.00025	0.00347	0.00163	7%	15%	0.00076	33%
	100	0.00025	0.00347	0.00163	7%	15%	0.00076	33%
	Idle	0.00144	0.01405	0.00660	10%	22%	0.00477	30%
2035	25	0.00027	0.00343	0.00159	8%	17%	0.00098	27%
	50	0.00025	0.00344	0.00160	7%	16%	0.00077	33%
	75	0.00025	0.00344	0.00160	7%	15%	0.00075	33%
	100	0.00025	0.00344	0.00160	7%	15%	0.00075	33%
	Idle	0.00143	0.01390	0.00650	10%	22%	0.00468	31%

Trucks

Tailpipe Emission Factor, g/vkt

	Speed, km/hr	Naphthalene	PM_{10}	$PM_{2.5}$	Pct of PM_{10}	Pct of $PM_{2.5}$	1,3 butadiene	pct of 1,3 butadiene
2015	25	0.00172	0.01912	0.01288	9%	13%	0.00209	82%
	50	0.00169	0.01912	0.01288	9%	13%	0.00119	142%
	75	0.00168	0.01912	0.01288	9%	13%	0.00102	165%
	100	0.00168	0.01912	0.01288	9%	13%	0.00102	165%
	Idle	0.00765	1.10140	1.06836	1%	1%	0.00653	117%
2025	25	0.00102	0.01184	0.00617	9%	16%	0.00175	58%
	50	0.00099	0.01184	0.00617	8%	16%	0.00099	99%
	75	0.00098	0.01184	0.00617	8%	16%	0.00086	114%
	100	0.00098	0.01184	0.00617	8%	16%	0.00086	114%
	Idle	0.00461	0.32372	0.31401	1%	1%	0.00548	84%
2035	25	0.00096	0.01139	0.00578	8%	17%	0.00173	56%
	50	0.00093	0.01139	0.00578	8%	16%	0.00098	95%
	75	0.00093	0.01139	0.00578	8%	16%	0.00085	110%
	100	0.00093	0.01139	0.00578	8%	16%	0.00085	110%
	Idle	0.00439	0.16016	0.15536	3%	3%	0.00540	81%

4.4.11 Odours

As part of the Work Plan, the potential for odours was assessed. Table 4.22 shows that the maximum concentrations for the odourous compounds are well below the odour thresholds with the exception of NO_2. It is important to note that the maximum concentrations for NO_2 are predicted to occur for only a few hours a year (Table 4.22 also includes the 99th percentile for NO_2) and the locations for the TEPA are generally in the parklands near the Plaza. Therefore, odours are not expected to be of concern under either the No Build or TEPA scenarios.

TABLE 4.22 - MODELLED RESULTS FOR ODOUROUS COMPOUNDS

Pollutant	Odour Threshold[1] µg/m³	Maximum No Build µg/m³	Maximum TEPA µg/m³
Nitrogen Dioxide	230	680[2]/ 284[3]	700[2]/ 223[3]
Formaldehyde	300	<5	<5
Benzene	108,000	<3	<3
Acetaldehyde	120	<5	<3
1, 3 Butadiene	2,400	<1	<1
Acrolein	4,100	<1	<1

[1] Source: "Thresholds for Chemicals with Established Occupational Health Standards (Table 5.3)", American Industrial Hygiene Association, 1989
[2]Concentrations are presented as NO_2 and represent highest concentrations in ACA
3 Represents 99th percentile NO_2 concentrations

4.5 Other Results Analysis

4.5.1 Concentrations North of E.C. ROW

While not specifically included in the analysis, traffic conditions along Huron Church beyond E.C. Row towards the Ambassador Bridge are expected to decrease by 20% with the TEPA. Congestion and traffic queuing should also decrease accordingly.

4.5.2 Concentrations at Tunnel Portals

Concentrations of gaseous contaminants are below criteria with the exception of NO_x with an averaging period of 1 hour. As mentioned previously, the criteria for NO_x is on an NO_2 basis and since the conversion to NO_2 from the NO is limited, exceedances would be expected to be non-existent. Maximum concentrations for the gaseous contaminants drop off precipitously by the 90th percentile (i.e., 90% of the time the concentrations will be below the value presented in the table) as shown in Table 4.21.

An alternative comparison could be made for short term exposure. The Ontario Ministry of Labour has set short term exposure limits (10,000 µg/m³ for coarse dust and 3000 µg/m³ for finer dust). The numbers for employee exposure limits are generally higher than Ministry of Environment (MOE) Ambient Air Quality Criteria (AAQC) numbers (120 µg/m³ for coarse particulate and 30 µg/m³ for finer particulate ($PM_{2.5}$)) for two reasons:

1. Exposure for workers is typically assessed for an 8-10 hour work day, five days a week
2. The worker population is assumed to be representative of a healthy population.

For many of the users of the areas on top of the tunnel portals, these criteria will likely apply. However, these criteria should not be applied to sensitive individuals.

Table 4.23 shows concentrations at the tunnel portals.

TABLE 4.23 - CONCENTRATIONS AT TUNNEL PORTALS

				2015			2025			2035		
Receptor	Description	Contaminant	Criteria, ug/m³	Exceedances	Max, µg/m³	90th percentile, µg/m³3	Exceedances	Max, µg/m³	90th percentile, µg/m³	Exceedances	Max, µg/m³	90th percentile, µg/m³
64	South Portal Bethlehem Labelle Tunnel	NO_x 1 hr	400	53	890	93	1	395	79	0	364	77
		NO_x 24 hr	200	0	181	110	0	107	77	0	102	75
		PM	120	145	994	475	182	1646	734	185	1902	846
		PM_{10}	50	147	262	136	179	419	200	182	484	229
		PM_{25}	30	40	44	31	67	64	39	74	71	42
72	Centre of Pulford Tunnel	NO_x 1 hr	400	0	210	75	0	127	68	0	121	68
		NO_x 24 hr	200	0	79	64	0	64	58	0	63	58
		PM	120	87	192	138	102	224	151	112	250	164
		PM_{10}	50	89	70	55	100	78	59	114	85	62
		PM_{25}	30	0	23	22	0	24	22	0	24	22
82	South Portal Reddock Tunnel	NO_x 1 hr	400	1	408	107	0	203	81	0	195	81
		NO_x 24 hr	200	0	151	91	0	95	70	0	93	70
		PM	120	189	761	326	204	898	378	217	1048	444
		PM_{10}	50	179	206	95	193	239	106	207	274	119
		PM_{25}	30	3	37	26	5	38	26	17	42	28
395	North Portal Spring Garden Tunnel	NO_x 1 hr	400	9	504	109	0	253	84	0	228	84
		NO_x 24 hr	200	0	139	94	0	91	71	0	87	71
		PM	120	259	627	339	275	1049	504	261	1201	628
		PM_{10}	50	250	185	105	263	295	151	253	336	172
		PM_{25}	30	9	36	27	62	51	33	94	54	36
675	Centre of Huron Church Tunnel	NO_x 1 hr	400	0	298	83	0	164	72	0	150	71
		NO_x 24 hr	200	0	91	73	0	69	62	0	68	61
		PM	120	159	303	205	175	356	231	181	399	252
		PM_{10}	50	153	93	69	166	105	75	176	116	81
		PM_{25}	30	0	26	23	0	26	23	0	28	25
676	South Portal Huron Church Tunnel	NO_x 1 hr	400	8	592	107	0	287	82	0	266	80
		NO_x 24 hr	200	0	136	94	0	88	71	0	85	68
		PM	120	212	528	327	226	670	397	228	783	451
		PM_{10}	50	207	144	95	213	177	110	218	206	124
		PM_{25}	30	0	29	26	3	31	26	27	37	29

5.0 CONCLUSIONS AND MITIGATION PLAN

In general, the air quality assessment shows that potential impacts from The Windsor-Essex Parkway would be small relative to background concentrations and limited to areas in close proximity to the road. Overall, the implementation of The Windsor-Essex Parkway will improve future transportation related air quality impacts within the study area over the No Build alternative because it provides a wide right-of-way and improvements in traffic flow, by eliminating stop-and-go conditions caused by the traffic signals that exist in the Highway 3 / Huron Church Road corridor today.

The study found that in comparing future conditions to existing conditions for both future No Build and with The Windsor-Essex Parkway, air quality will improve for gaseous pollutants due to newer engine technologies and fuels despite the predicted increase in traffic due to population growth, but could slightly deteriorate for particulate based compounds due to road dust arising from increased traffic flows.

The results for the proposed crossing and Plaza indicate that the maximum predicted concentrations of $PM_{2.5}$ and NOx are generally similar to those of The Windsor-Essex Parkway. Given the location of the crossing and Plaza in industrial areas impacts to air quality for sensitive receptors are not predicted.

The results of the study show that the existing air quality in the study area is typical of an urban setting, which is characterized by elevated pollutant concentrations in relation to rural areas, with periodic compromised air quality due to particulate based contaminants, which typically occurs during smog events.

Results of this assessment were used to support both the:

> *Human Health Risk Assessment (HHRA), Technically and Environmentally Preferred Alternative –, December 2008* which compares the relative risk of the TEPA to the future No Build, and the
>
> *Social Impact Assessment, Technically and Environmentally Preferred Alternative –, December 2008* which addresses the impacts of the TEPA on the community.

These two documents should be reviewed for the discussion of the impacts at neighbourhoods and sensitive receptors.

5.1 Mitigation

The construction of the TEPA has the potential to affect the air quality in the vicinity of the site during the construction phase. As with any construction site, these emissions will be of relatively short duration and are unlikely to have any long-lasting effect on the surrounding area. Dust impacts should be mitigated through the use of proper controls, such as:

- periodic watering of unpaved (non-vegetated) areas;
- periodic watering of stockpiles;
- limiting speed of vehicular travel;

- use of water sprays during the loading, unloading of materials;
- use of calcium chloride, and
- sweeping and/or water flushing of the entrances to the construction zones.

Road sweeping practices in accordance with maintenance standards will be employed to reduce silt loading on The Windsor-Essex Parkway.

These types of controls aid in minimizing impacts to the environment during the construction phase.

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APPENDICES

APPENDIX A: ROADWAY SEGMENTS CONSIDERED IN ANALYSIS AND TRAFFIC DATA

Roadway Segments Considered in the Assessment

The dispersion modeling analysis considered a large number of existing roads and roadway segments, in addition to new, or modified roads that will be constructed through implementation of the alternatives. These are as follows:

Roads North of E.C. Row Expressway

Huron Church Road and all major intersecting roads along Huron Church were considered from the E.C. Row Expressway up to Riverside Drive. This includes the existing Ambassador Plaza, and local roads in the immediate vicinity of the Plaza. The roads that were included in the assessment are listed below:

- Riverside Dr.
- University Ave.
- Wyandotte St.
- Patricia Rd. / Union St. / Sunset Ave.
- College Ave.
- Millen St.
- Girardot St.
- Tecumseh Rd.
- Dorchester Rd.
- Prince / Totten Rd.
- Malden Rd.
- Industrial Dr.

In addition, all traffic on the Canadian side of the Ambassador Bridge and through the Ambassador Plaza was included in the assessment.

Roads South of E.C. Row Expressway

Huron Church Road, Talbot Road/Highway 3 and all major intersections south of E.C. Row Expressway along the Huron Church / Highway 3 corridor were also included in the analysis. These are as follows:

- Spring Garden Rd. / Labelle St.
- Lambton St. / Grand Marais Rd.
- Pulford St.
- Reddock Ave
- Todd Ln / Cabana Rd.
- Huron Line
- Geraedt's Rd.
- Cousineau Rd. / Sandwich Pkwy West
- Montgomery Dr.
- Surrey Dr.
- Grosvenor Rd.
- Howard Ave.
- Outer Dr.
- 6th Concession
- Roseland Dr.
- Eastbourne Ave.
- North Talbot Rd.
- Tuson Way

Roads in the Vicinity of Ojibway Parkway

The E.C. Row Expressway and Ojibway Parkway also formed part of the road network included in the assessment. A number of local roads in the vicinity of these major arteries were also assessed. They are as follows:

- E.C. Row Expressway
- Ojibway Parkway
- Malden Rd.
- Matchette Rd.
- Broadway St. (E & W)
- Chappus St.
- GN Booth Dr.
- Sandwich St.
- Prospect Ave.
- Beech St.
- Russel St.
- Armanda St.
- South St.
- Chippewa St.
- Brock St.

A map showing the network of existing roadways included in the analysis is shown in Figure A.1.

FIGURE A.1 - MODELLED ROAD NETWORK – EXISTING ROADWAYS

TABLE A- 1 HOURLY TRAFFIC PROFILES USED IN MODELING

	Profile 1		Profile 2		Profile 3		Profile 4	
Period Starting	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound
12:00 AM	47	27	22	22	8	9	29	20
01:00 AM	33	21	17	16	4	4	26	15
02:00 AM	33	19	14	15	3	3	24	14
03:00 AM	32	19	14	12	2	2	26	11
04:00 AM	41	18	18	12	2	3	34	12
05:00 AM	65	19	37	16	8	8	54	14
06:00 AM	135	28	92	29	29	21	114	24
07:00 AM	157	30	124	46	50	43	152	34
08:00 AM	175	38	149	53	81	88	139	53
09:00 AM	141	43	103	44	57	68	102	52
10:00 AM	114	48	82	46	67	68	100	56
11:00 AM	111	57	85	56	81	80	99	63
12:00 PM	112	58	87	58	81	79	100	64
01:00 PM	114	61	85	59	82	74	96	65
02:00 PM	117	69	95	68	89	84	102	74
03:00 PM	108	88	104	94	102	95	111	89
04:00 PM	100	100	100	100	100	100	100	100
05:00 PM	113	96	99	100	99	102	94	110
06:00 PM	116	82	92	75	91	96	98	98
07:00 PM	86	65	71	58	73	71	78	79
08:00 PM	94	67	63	59	61	58	74	65
09:00 PM	84	57	53	50	50	40	64	51
10:00 PM	75	48	50	42	27	29	52	44
11:00 PM	62	38	37	36	18	18	39	35
		3461		2856		2506		3151

Profile 1: Huron Church North of E.C. Row in Base Cases
Profile 2: Huron Church South of E.C. Row in Base Cases and Freeway in Alternatives 1-3
Profile 3: All other Streets in Base Cases and Alternatives 1-3
Profile 4: Huron Church North of E.C. Row and E.C. Row in Alternatives 1-3

Profiles have been standardized to modelled p.m. peak hour 4:00 to 5:00 p.m.
The modelled a.m. peak hour is between 7:00 and 8:00 a.m.

TABLE A-1 CONT'D.

Profile 1	Profile 2	Profile 3	Profile 4
0.021	0.015	0.007	0.016
0.016	0.011	0.003	0.013
0.015	0.010	0.002	0.012
0.015	0.009	0.002	0.012
0.017	0.010	0.002	0.014
0.024	0.018	0.006	0.022
0.047	0.042	0.020	0.044
0.054	0.060	0.037	0.059
0.061	0.071	0.068	0.061
0.053	0.052	0.050	0.049
0.047	0.045	0.054	0.050
0.048	0.049	0.064	0.051
0.049	0.051	0.064	0.052
0.050	0.050	0.062	0.051
0.054	0.057	0.069	0.056
0.057	0.070	0.078	0.064
0.058	0.070	0.080	0.063
0.061	0.069	0.080	0.065
0.057	0.058	0.074	0.062
0.044	0.045	0.057	0.050
0.047	0.043	0.047	0.044
0.041	0.036	0.036	0.037
0.036	0.032	0.022	0.030
0.029	0.025	0.014	0.023

TABLE A- 2 24-HOUR ANNUAL AVERAGE DAILY TRAFFIC (AADT) FOR THE WINDSOR-ESSEX PARKWAY – YEAR 2015

LOCATION	SECTION		24 Hour AADT									
			Total Cars and Trucks		Local Cars		Local Trucks		International Cars		International Trucks	
	FROM	TO			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
HC Road	Riverside	University	6911	5457	6735	5369	173	84	3	1	0	3
	University	Wyandotte	3258	3990	3090	3626	91	118	58	242	20	3
	Wyandotte	AMB Off Ramp	2322	3177	2285	3005	0	0	37	172	0	0
	AMB Off Ramp	College	17448	6323	8617	6228	229	94	6211	1	2391	0
	College St	Girardot St	25364	24092	18255	16675	543	487	6361	4419	205	2512
	Girardot St	Tecumseh Rd	24197	23801	17763	17139	636	571	5615	3744	182	2347
	Tecumseh Rd	Dorchester St	27469	27266	21118	21024	778	716	5388	3342	186	2185
	Dorchester St	Prince Rd/Totten St	27511	28532	21714	22815	693	656	4945	3065	159	1997
	Prince Rd/Totten St	Malden Rd	30088	31791	24278	26074	777	757	4852	3020	180	1940
	Malden Rd	Industrial Rd	24739	26772	19251	21200	577	580	4904	3155	7	1837
	Industrial Rd	EC Row N. Ramp Terminal	27169	28916	21772	23501	662	652	4735	2918	0	1845
	EC Row N. Ramp Terminal	EC Row S. Ramp Terminal	25821	35043	20057	30308	531	646	5233	2573	0	1516
	S. of EC Row S. Ramp Terminal		26685	33185	22055	28396	568	479	4062	2730	0	1580
S Service Rd	N. of Bethlehem Ave		0	29261	0	24519	0	427	0	2759	0	1556
	Bethlehem Ave	Grand Marais Rd	0	5258	0	4817	0	125	0	316	0	0
N Service Rd	N. of Labelle St		27505	0	23407	0	478	0	3620	0	0	0
	Labelle St	Grand Marais Rd Ramp	25346	0	23702	0	256	0	1388	0	0	0
HC Road	Grand Marais Rd	Pulford St	7630	4265	7090	4053	11	25	529	187	0	0
	Pulford St	Todd Ln/Cabana Rd	7166	4243	7150	4210	16	34	0	0	0	0
	Todd Ln/Cabana Rd	Huron Church Line	15881	12383	15077	11891	174	111	630	381	0	0
Talbot Road	Huron Church Line	St Clair College	11107	9691	11058	9634	49	57	0	0	0	0
	St Clair College	Cousineau Dr	9229	8012	8007	6624	77	89	1145	1166	0	133
	Cousineau Dr	Howard Ave	8722	2696	8064	2343	130	45	527	229	0	79
	Howard Ave	Laurier Extension	11607	11385	11366	11161	241	224	0	0	0	0
	S. of Laurier Extension		12021	11914	11771	11680	250	234	0	0	0	0
Ojibway Pwy	EC Row Expressway	GN Booth Dr	10180	10556	9926	9978	137	137	27	14	91	427
	GN Booth Dr	Sandwich St	10116	10433	9861	9845	136	135	27	15	91	438
	Sandwich St	Prospect Ave	9478	9729	9354	9613	75	78	50	37	0	0
	N. of Prospect Ave		9415	9510	9292	9397	75	77	49	36	0	0
	CROSSING ROADS				NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Wyandotte	W of HuronChurch		5168	4869	4808	4435	0	0	359	435	0	0
	E of HuronChurch		3574	5121	2813	4048	21	135	722	937	18	0
University	W of HuronChurch		1254	1192	1254	1192	0	0	0	0	0	0
	E of HuronChurch		2138	2118	1947	1986	118	91	70	21	3	20
Riverside	W of HuronChurch		3390	3487	3390	3487	0	0	0	0	0	0
	E of HuronChurch		6770	5671	6598	5633	0	0	173	37	0	0
AMB Off Ramp	E of HuronChurch		0	12464	0	931	0	43	0	7710	0	3781
AMB On Ramp	E of HuronChurch		6286	0	309	0	11	0	5792	0	174	0
Patricia	AMB	Wyandotte	4111	5195	552	1458	21	57	3367	3412	171	267
College St	E. of HC Road		6514	6361	6343	5558	168	124	3	535	0	144
	W. of HC Road		1867	806	1670	752	0	0	197	54	0	0
Girardot St	E. of HC Road		1133	1160	1017	1029	0	0	116	130	0	0
	W. of HC Road		2346	2275	2258	2216	41	25	48	33	0	0
Tecumseh Rd	E. of HC Road		5829	6836	5489	6174	139	148	201	359	0	156
	W. of HC Road		6604	6994	6420	6866	0	0	184	127	0	0
Dorchester St	E. of HC Road		1693	1533	1520	1350	0	0	173	183	0	0
	W. of HC Road		1419	807	1370	786	26	10	24	11	0	0
Prince Rd/Totten St	E. of HC Road		2075	2907	1998	2777	0	0	77	130	0	0
	W. of HC Road		4782	5176	4701	5101	0	0	81	76	0	0
Malden Rd	E. of HC Road		1377	1126	1172	923	0	0	205	203	0	0
	W. of HC Road		7891	8417	6798	7406	386	398	553	38	154	576
Industrial Rd	E. of HC Road		3619	3426	3425	3181	49	57	139	172	6	16
	W. of HC Road		4072	3166	3914	2791	158	192	0	0	0	183
EC Row N. Ramp Terminal	E. of HC Road (E-N/S Off Ramp & S-W On Ramp)		14334	2042	13014	1881	270	0	1050	162	0	0
	W. of HC Road (N-W On Ramp)		607	0	420	0	14	0	51	0	122	0
EC Row S. Ramp Terminal	E. of HC Road (S-E On Ramp)		0	7407	0	7341	0	66	0	0	0	0
	W. of HC Road (N-E On Ramp & W-N/S Off Ramp)		8637	2904	7642	2447	263	81	451	376	280	0
					WB	EB	WB	EB	WB	EB	WB	EB
Labelle St/Bethlehem Ave	E. of N. Service Rd		2903	2203	2670	2014	0	0	234	190	0	0
	between N. and S. Service Rd		1403	3202	1403	3105	0	0	0	97	0	0
	W. of S. Service Rd		1804	3255	1803	3251	0	0	2	4	0	0
Grand Marais Rd/Lambton Rd	E. of HC Rd		3982	3270	3730	3026	0	0	251	244	0	0
	W. of HC Rd		1714	1960	1647	1912	29	17	38	32	0	0
Pulford St	E. of HC Rd		2407	1762	2147	1567	0	0	261	195	0	0
Todd Ln/Cabana Rd	E. of HC Rd		8767	7221	8220	6607	0	0	547	613	0	0
	between HC Rd and Hwy 401 Off-ramp		7871	13883	7871	12346	0	0	0	1537	0	0
	W. of Hwy 401 Off-ramp		9953	10417	9940	10406	0	0	13	10	0	0
Huron Church Line	W. of HC Rd		7456	6841	7022	6398	93	98	341	345	0	0
St Clair College	E. of Talbot Rd		3009	9320	2914	9043	0	0	95	277	0	0
Cousineau Dr	E. of Talbot Rd		6321	5777	5201	4740	0	0	1120	1037	0	0
	W. of Talbot Rd		7099	5807	7099	5807	0	0	0	0	0	0
Howard Ave	E. of Talbot Rd		7718	8092	7585	7941	133	148	0	3	0	0
	W. of Talbot Rd		6911	8038	6746	7837	152	183	13	17	0	0
Laurier Extension	W. of Talbot Rd/Hwy 3		6658	6543	6500	6380	146	149	13	14	0	0
EC Row Expressway	E. of Huron Church Rd		35042	43067	31755	37865	679	775	2215	3256	393	1170
	W. of Malden Rd		23389	26224	21069	21815	452	480	1318	3004	550	926
	W. of Matchette		16125	21479	15668	20472	369	1007	20	0	67	0
GN Booth Dr	W. of Ojibway Pwy		357	461	346	448	7	8	4	5	0	0
Sandwich St	W. of Ojibway Pwy		1533	1388	1361	1261	148	91	24	35	0	0
Prospect Ave	W. of Ojibway Pwy		342	437	331	426	7	4	4	7	0	0

TABLE A-2 CONTD.

HIGHWAY 401 Mainline											
			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
S. of Hwy 3 merge/split	19954	21530	11418	10688	322	249	3100	3035	5113	7557
N. of Howard Ave	14215	22874	7630	11262	237	275	2666	3633	3682	7704
At Grand Marais Rd	18476	30697	11664	17304	284	374	3149	5005	3379	8013
E. of Malden Rd	5001	11469	1269	2585	37	71	1064	2549	2630	6264
To/From Canadian Plaza	9990	17980	0	3	2	4	4203	8626	5784	9346

HIGHWAY 401 Ramps										
Hwy 3 merge/split			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB Off Ramp (prior to Highway 3 / Laurier split)	14237	0	11849	0	255	0	1529	0	603	0
401 NB On Ramp	8722	0	8557	0	165	0	0	0	0	0
401 SB Off Ramp	0	8660	0	8492	0	168	0	0	0	0
401 SB On Ramp	0	5656	0	4321	0	111	0	986	0	238
At Howard Ave	0	0	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp	745	0	731	0	14	0	0	0	0	0
401 SB On Ramp	0	4521	0	3454	0	89	0	788	0	190
At St. Clair College	0	0	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB Off Ramp	4553	0	4535	0	17	0	0	0	0	0
401 SB Off Ramp (direct ramp to Hwy 3)	0	5307	0	4632	0	59	0	615	0	0
401 SB On Ramp	0	5498	0	5471	0	27	0	0	0	0
At Todd Ln / Cabana Rd			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp	7975	0	7014	0	96	0	864	0	0	0
401 SB Off Ramp (direct ramp to Todd lane)	0	7857	0	6858	0	88	0	910	0	0
At Huron Church Rd			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB Off Ramp	13238	0	10987	0	257	0	1993	0	0	0
401 SB On Ramp	0	19424	0	15256	0	313	0	2360	0	1496
EC Row Expressway EB to Hwy 401			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp from EC ROW EB	1496	0	0	0	0	0	1222	0	274	0
Hwy 401 to EC Row Expressway WB										
401 SB Off Ramp to EC Row WB	0	1092	0	126	0	10	0	956	0	0
EC Row Expressway WB to Hwy 401			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp from EC ROW WB	2083	0	0	0	0	0	1309	0	774	0
Hwy 401 to EC Row Expressway EB / Huron Church Road			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 SB Off Ramp to EC Row EB / Huron Church Rd	0	4166	0	2948	0	71	0	892	0	256
At Malden Rd			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp	541	0	417	0	69	0	45	0	10	0
401 SB Off Ramp	0	879	0	574	0	121	0	183	0	0

	FROM	TO										
Highway 401 Mainline Vol	S. of Hwy 3 merge/split	Hwy 3/ 401 NB Off Ramp	19954	0	11418	0	322	0	3100	0	5113	0
	Hwy 3/ 401 NB Off Ramp	Hwy 3/401 NB On Ramp	5337	0	1664	0	67	0	1318	0	2289	0
	Hwy 3/401 NB On Ramp	Howard NB On Ramp	14215	0	7630	0	237	0	2666	0	3682	0
	Howard NB On Ramp	St. Clair/401 NB Off Ramp	14993	0	8048	0	250	0	2812	0	3883	0
	St. Clair/401 NB Off Ramp	Pulford/401 NB On Ramp	9858	0	4828	0	194	0	2123	0	2713	0
	Pulford/401 NB On Ramp	HC Rd/401 NB Off Ramp	19571	0	10722		349		3920		4580	
	HC Rd/401 NB Off Ramp	EC Row EB to 401 NB On Ramp	4502	0	2842		69		767		823	
	EC Row EB to 401 NB On Ramp	EC Row WB to 401 NB On Ramp	6982	0	0		0		2214		4768	
	EC Row WB to 401 NB On Ramp	Malden/401 NB On Ramp	9032	0	0		0		3789		5242	
	Malden/401 NB On Ramp	Canadian Plaza	9987	0	0		0		4203		5784	
	Canadian Plaza	Malden/401 SB Off Ramp	0	17980		3		4		8626		9346
	Malden/401 SB Off Ramp	401 SB to EC Row EB / HC Rd Off-ram	0	17031		3		4		8130		8894
	401 SB to EC Row EB / HC Rd Off-ram	401 SB to EC Row WB Off-ramp	0	12313		2		3		5878		6430
	401 SB to EC Row WB Off-ramp	HC Rd/401 SB On Ramp	0	10974		2		3		5239		5731
	HC Rd/401 SB On Ramp	Pulford/401 SB Off Ramp	0	30697	0	17304	0	374	0	5005	0	8013
	Pulford/401 SB Off Ramp	St Clair/401 SB Off Ramp	0	22166	0	12495	0	270	0	3614	0	5787
	St Clair/401 SB Off Ramp	St Clair/401 SB On Ramp	0	16809	0	8043	0	211	0	2960	0	5596
	St Clair/401 SB On Ramp	Howard SB On Ramp	0	22874	0	11262	0	275	0	3633	0	7704
	Howard SB On Ramp	Hwy 3/401 SB Off Ramp	0	27843	0	13822	0	322	0	3925	0	9773
	Hwy 3/401 SB Off Ramp	Hwy 3/401 SB On Ramp	0	18004	0	8530	0	204	0	3073	0	6197
	Hwy 3/401 SB On Ramp	S. of Hwy 3 merge/split	0	21530	0	10688	0	249	0	3035	0	7557

Malden	Chappus	401 S. Ramp	8966	11480	7966	10186	345	490	655	804	0	0
	401 S. Ramp	401 N. Ramp	9957	7916	8856	7008	383	341	718	567	0	0
	N. of 401 N. Ramp		7195	8613	6410	7630	276	370	510	613	0	0
Matchette	Chappus	EC Row S. Ramp	8512	7933	8363	7730	0	0	149	203	0	0
	EC Row S. Ramp	EC Row N. Ramp	2620	8916	2477	8734	0	0	144	182	0	0
	EC Row N. Ramp	Carmichael	4861	3303	4744	3150	0	0	117	153	0	0

TABLE A- 3 24-HOUR ANNUAL AVERAGE DAILY TRAFFIC (AADT) FOR THE WINDSOR-ESSEX PARKWAY – YEAR 2025

LOCATION	SECTION		24 Hour AAD					
			Total Cars and Trucks		Local Cars		Local Trucks	
	FROM	TO			NB / WB	SB / EB	NB / WB	SB / EB
HC Road	Riverside	University	6986	5610	6800	5480	184	89
	University	Wyandotte	3233	4092	3052	3697	91	121
	Wyandotte	AMB Off Ramp	2280	3224	2234	3061	0	0
	AMB Off Ramp	College	18348	6447	8494	6347	234	100
	College St	Girardot St	26218	24966	18669	16795	572	497
	Girardot St	Tecumseh Rd	25129	25158	18255	17710	683	597
	Tecumseh Rd	Dorchester St	28309	28199	21600	21412	834	741
	Dorchester St	Prince Rd/Totten St	28358	29470	22280	23208	743	678
	Prince Rd/Totten St	Malden Rd	30998	33157	24902	27007	831	798
	Malden Rd	Industrial Rd	24761	28255	19169	22115	608	631
	Industrial Rd	EC Row N. Ramp Terminal	28022	30240	22450	24431	704	687
	EC Row N. Ramp Terminal	EC Row S. Ramp Terminal	26150	38090	20176	32888	559	713
	S. of EC Row S. Ramp Terminal		29919	35496	24538	30425	662	522
S Service Rd	N. of Bethlehem Ave		0	31059	0	26115	0	470
	Bethlehem Ave	Grand Marais Rd	0	5649	0	5175	0	138
N Service Rd	N. of Labelle St		30541	0	25865	0	555	0
	Labelle St	Grand Marais Rd Ramp	28423	0	26585	0	307	0
HC Road	Grand Marais Rd	Pulford St	8190	4743	7647	4554	11	15
	Pulford St	Todd Ln/Cabana Rd	7912	4880	7883	4857	16	23
	Todd Ln/Cabana Rd	Huron Church Line	16915	13881	15998	13297	195	120
Talbot Road	Huron Church Line	St Clair College	11982	10375	11896	10307	86	67
	St Clair College	Cousineau Dr	9448	8541	8149	6995	85	93
	Cousineau Dr	Howard Ave	8810	2709	8086	2324	130	42
	Howard Ave	Laurier Extension	12429	12257	12176	12019	253	237
	S. of Laurier Extension		12974	12826	12710	12577	264	248
Ojibway Pwy	EC Row Expressway	GN Booth Dr	10894	11127	10615	10438	140	134
	GN Booth Dr	Sandwich St	10830	10928	10549	10237	139	132
	Sandwich St	Prospect Ave	10088	10069	9965	9953	74	74
	N. of Prospect Ave		10025	9858	9903	9744	74	73
	CROSSING ROADS				NB / WB	SB / EB	NB / WB	SB / EB
Wyandotte	W of HuronChurch		5099	4858	4729	4420	0	0
	E of HuronChurch		3562	5201	2772	4133	18	142
University	W of HuronChurch		1365	1272	1365	1272	0	0
	E of HuronChurch		2311	2214	2079	2079	121	91
Riverside	W of HuronChurch		3552	3655	3552	3655	0	0
	E of HuronChurch		6981	5782	6817	5737	0	0
AMB Off Ramp	E of HuronChurch		0	12464	0	931	0	43
AMB On Ramp	E of HuronChurch		6558	0	246	0	6	0
Patricia	AMB	Wyandotte	4149	5049	435	1328	13	54
College St	E. of HC Road		6603	6526	6437	5640	163	127
	W. of HC Road		2068	956	1677	904	0	0
Girardot St	E. of HC Road		1154	1148	1032	1014	0	0
	W. of HC Road		2296	2202	2208	2148	42	25
Tecumseh Rd	E. of HC Road		5786	6844	5448	6099	137	145
	W. of HC Road		6488	7115	6271	6983	0	0
Dorchester St	E. of HC Road		1726	1557	1544	1361	0	0
	W. of HC Road		1419	808	1369	787	26	10
Prince Rd/Totten St	E. of HC Road		2213	2353	2133	2247	0	0
	W. of HC Road		5515	5545	5414	5466	0	0
Malden Rd	E. of HC Road		1631	1358	1355	1081	0	0
	W. of HC Road		8223	8875	7049	7669	401	393
Industrial Rd	E. of HC Road		3926	3674	3722	3440	48	57
	W. of HC Road		4262	3458	4094	3044	168	204
EC Row N. Ramp Terminal	E. of HC Road (E-N/S Off Ramp & S-W On Ramp)		16245	2068	14906	1894	311	0
	W. of HC Road (N-W On Ramp)		583	0	380	0	11	0
EC Row S. Ramp Terminal	E. of HC Road (S-E On Ramp)		0	10547	0	10444	0	103
	W. of HC Road (N-E On Ramp & W-N/S Off Ramp)		9466	3083	8237	2636	296	85
					WB	EB	WB	EB
Labelle St/Bethlehem Ave	E. of N. Service Rd		3112	2438	2867	2223	0	0
	between N. and S. Service Rd		1232	3565	1232	3459	0	0
	W. of S. Service Rd		1678	4360	1676	4354	0	0
Grand Marais Rd/Lambton Rd	E. of HC Rd		4372	3595	4139	3339	0	0
	W. of HC Rd		1876	2193	1801	2141	34	20
Pulford St	E. of HC Rd		2635	1928	2341	1707	0	0
Todd Ln/Cabana Rd	E. of HC Rd		9440	7526	8902	6838	0	0
	between HC Rd and Hwy 401 Off-ramp		8307	17117	8307	14977	0	0
	W. of Hwy 401 Off-ramp		11908	11817	11893	11806	0	0

TABLE A-3 CONT'D.

HIGHWAY 401 Mainline				NB / WB	SB / EB	NB / WB	SB / EB
S. of Hwy 3 merge/split	24657	27440	14332	13309	407	303
N. of Howard Ave	18139	26502	9295	11967	298	292
At Grand Marais Rd	24696	36588	15060	19589	375	420
E. of Malden Rd	7354	13403	1643	2597	48	66
To/From Canadian Plaza	12620	21442	1	5	3	4

HIGHWAY 401 Ramps						
Hwy 3 merge/split			NB / WB	SB / EB	NB / WB	SB / EB
401 NB Off Ramp (prior to Highway 3 / Laurier split)	15464	0	12538	0	271	0
401 NB On Ramp	9051	0	8883	0	168	0
401 SB Off Ramp	0	9136	0	8965	0	171
401 SB On Ramp	0	6167	0	4518	0	114
At Howard Ave	0	0	NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp	776	0	761	0	14	0
401 SB On Ramp	0	4758	0	3485	0	88
At St. Clair College	0	0	NB / WB	SB / EB	NB / WB	SB / EB
401 NB Off Ramp	5033	0	5003	0	29	0
401 SB Off Ramp (direct ramp to Hwy 3)	0	6270	0	5537	0	67
401 SB On Ramp	0	5906	0	5872	0	33
At Todd Ln / Cabana Rd			NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp	10756	0	9479	0	137	0
401 SB Off Ramp (direct ramp to Todd lane)	0	9406	0	8305	0	100
At Huron Church Rd			NB / WB	SB / EB	NB / WB	SB / EB
401 NB Off Ramp	17108	0	14155	0	344	0
401 SB On Ramp	0	22430	0	17849	0	367
EC Row Expressway EB to Hwy 401			NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp from EC ROW EB	1689	0	0	0	0	0
Hwy 401 to EC Row Expressway WB						
401 SB Off Ramp to EC Row WB	0	1133	0	155	0	14
EC Row Expressway WB to Hwy 401			NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp from EC ROW WB	2521	0	0	0	0	0
B / Huron Church Road			NB / WB	SB / EB	NB / WB	SB / EB
401 SB Off Ramp to EC Row EB / Huron Church Rd	0	4716	0	646	0	58
At Malden Rd			NB / WB	SB / EB	NB / WB	SB / EB
401 NB On Ramp	640	0	477	0	65	0
401 SB Off Ramp	0	1059	0	739	0	116

	FROM	TO						
Highway 401 Mainline Vol	S. of Hwy 3 merge/split	Hwy 3/ 401 NB Off Ramp	24657	0	14332	0	407	0
	Hwy 3/ 401 NB Off Ramp	Hwy 3/401 NB On Ramp	8978	0	2919	0	119	0
	Hwy 3/401 NB On Ramp	Howard NB On Ramp	18139	0	9295	0	298	0
	Howard NB On Ramp	St. Clair/401 NB Off Ramp	18954	0	9713	0	311	0
	St. Clair/401 NB Off Ramp	Pulford/401 NB On Ramp	13267	0	6051	0	250	0
	Pulford/401 NB On Ramp	HC Rd/401 NB Off Ramp	24696	0	15060		375	
	HC Rd/401 NB Off Ramp	EC Row EB to 401 NB On Ramp	7354	0	1643		48	
	EC Row EB to 401 NB On Ramp	EC Row WB to 401 NB On Ramp	8883	0	0		0	
	EC Row WB to 401 NB On Ramp	Malden/401 NB On Ramp	11996	0	0		0	
	Malden/401 NB On Ramp	Canadian Plaza	12617	0	0		0	
	Canadian Plaza	Malden/401 SB Off Ramp	0	21442		5		4
	Malden/401 SB Off Ramp	401 SB to EC Row EB / HC Rd Off-ramp	0	20280		4		4
	401 SB to EC Row EB / HC Rd Off-ramp	401 SB to EC Row WB Off-ramp	0	14206		3		3
	401 SB to EC Row WB Off-ramp	HC Rd/401 SB On Ramp	0	12747		3		2
	HC Rd/401 SB On Ramp	Pulford/401 SB Off Ramp	0	36588	0	19589	0	420
	Pulford/401 SB Off Ramp	St Clair/401 SB Off Ramp	0	26254	0	14056	0	301
	St Clair/401 SB Off Ramp	St Clair/401 SB On Ramp	0	19917	0	8698	0	230
	St Clair/401 SB On Ramp	Howard SB On Ramp	0	26502	0	11967	0	292
	Howard SB On Ramp	Hwy 3/401 SB Off Ramp	0	31625	0	15339	0	349
	Hwy 3/401 SB Off Ramp	Hwy 3/401 SB On Ramp	0	21212	0	9196	0	218
	Hwy 3/401 SB On Ramp	S. of Hwy 3 merge/split	0	27440	0	13309	0	303

Malden	Chappus	401 S. Ramp	9084	11528	7948	10336	341	449
	401 S. Ramp	401 N. Ramp	10193	7192	8938	6456	381	279
	N. of 401 N. Ramp		6982	8058	6129	7230	261	313
Matchette	Chappus	EC Row S. Ramp	9261	9268	9114	8967	0	0
	EC Row S. Ramp	EC Row N. Ramp	2620	10207	2499	9937	0	0
	EC Row N. Ramp	Carmichael	5152	3168	5032	2977	0	0

TABLE A- 4 24-HOUR ANNUAL AVERAGE DAILY TRAFFIC (AADT) FOR THE WINDSOR-ESSEX PARKWAY – YEAR 2035

LOCATION	SECTION		24 Hour AADT									
			Total Cars and Trucks		Local Cars		Local Trucks		International Cars		International Trucks	
	FROM	TO			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
HC Road	Riverside	University	6924	5840	6718	5664	203	94	3	1	0	81
	University	Wyandotte	3108	4254	2886	3812	92	124	68	237	62	81
	Wyandotte	AMB Off Ramp	2131	3370	2085	3201	0	0	46	169	0	0
	AMB Off Ramp	College	19543	6656	7999	6549	244	106	7545	1	3755	0
	College St	Girardot St	26227	25933	18469	16494	574	523	6880	5152	303	3764
	Girardot St	Tecumseh Rd	25638	26525	18403	17853	712	625	6238	4516	284	3530
	Tecumseh Rd	Dorchester St	28797	29299	21703	21695	867	781	5937	3720	289	3103
	Dorchester St	Prince Rd/Totten St	28875	30357	22442	23399	768	705	5418	3417	247	2837
	Prince Rd/Totten St	Malden Rd	31736	34429	25203	27845	865	847	5387	3091	281	2646
	Malden Rd	Industrial Rd	25383	29967	19460	23370	645	683	5267	3219	10	2695
	Industrial Rd	EC Row N. Ramp Terminal	28657	32868	22816	26119	734	752	5107	3366	0	2631
	EC Row N. Ramp Terminal	EC Row S. Ramp Terminal	27189	41670	20771	35653	586	783	5832	3017	0	2217
	S. of EC Row S. Ramp Terminal		32362	39757	26387	33807	738	586	5237	3240	0	2123
S Service Rd	N. of Bethlehem Ave		0	34217	0	28534	0	519	0	3150	0	2015
	Bethlehem Ave	Grand Marais Rd	0	6218	0	5676	0	162	0	379	0	0
N Service Rd	N. of Labelle St		32939	0	27751	0	614	0	4574	0	0	0
	Labelle St	Grand Marais Rd Ramp	30782	0	28721	0	355	0	1706	0	0	0
HC Road	Grand Marais Rd	Pulford St	8774	5374	8199	5163	12	19	563	192	0	0
	Pulford St	Todd Ln/Cabana Rd	8720	5644	8703	5617	17	27	0	0	0	0
	Todd Ln/Cabana Rd	Huron Church Line	17838	15721	16787	15016	212	134	839	572	0	0
Talbot Road	Huron Church Line	St Clair College	12692	11023	12538	10948	154	75	0	0	0	0
	St Clair College	Cousineau Dr	9792	9249	8458	7440	82	94	1253	1464	0	252
	Cousineau Dr	Howard Ave	9366	2847	8606	2391	120	41	640	288	0	126
	Howard Ave	Laurier Extension	13137	13283	12869	13019	268	264	0	0	0	0
	S. of Laurier Extension		13639	13900	13361	13624	278	277	0	0	0	0
Ojibway Pwy	EC Row Expressway	GN Booth Dr	11697	11777	11383	10973	146	131	26	19	142	654
	GN Booth Dr	Sandwich St	11632	11578	11317	10772	146	129	26	19	143	658
	Sandwich St	Prospect Ave	10788	10588	10661	10469	76	73	52	47	0	0
	N. of Prospect Ave		10725	10387	10599	10270	75	71	51	46	0	0
	CROSSING ROADS				NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB
Wyandotte	W of HuronChurch		5008	4886	4627	4439	0	0	381	446	0	0
	E of HuronChurch		3648	5398	2803	4299	17	157	770	942	58	0
University	W of HuronChurch		1511	1306	1511	1306	0	0	0	0	0	0
	E of HuronChurch		2481	2273	2207	2097	124	92	68	22	81	62
Riverside	W of HuronChurch		3642	3993	3642	3993	0	0	0	0	0	0
	E of HuronChurch		7225	5957	7055	5911	0	0	170	46	0	0
AMB Off Ramp	E of HuronChurch		0	12464	0	931	0	43	0	7710	0	3781
AMB On Ramp	E of HuronChurch		6917	0	222	0	6	0	6416	0	273	0
Patricia	AMB	Wyandotte	4205	4873	389	969	12	42	3571	3469	234	394
College St	E. of HC Road		6758	6581	6583	5598	172	130	4	579	0	273
	W. of HC Road		2272	1076	1730	1027	0	0	542	48	0	0
Girardot St	E. of HC Road		1162	1155	1037	1025	0	0	125	130	0	0
	W. of HC Road		2290	2168	2202	2109	42	26	47	33	0	0
Tecumseh Rd	E. of HC Road		6210	7294	5868	6315	140	146	202	468	0	366
	W. of HC Road		6679	7355	6321	7251	0	0	357	104	0	0
Dorchester St	E. of HC Road		1748	1574	1561	1382	0	0	187	191	0	0
	W. of HC Road		1419	807	1368	785	26	11	24	11	0	0
Prince Rd/Totten St	E. of HC Road		2311	2888	2228	2764	0	0	83	125	0	0
	W. of HC Road		5053	5710	4985	5626	0	0	68	85	0	0
Malden Rd	E. of HC Road		1858	1508	1545	990	0	0	313	519	0	0
	W. of HC Road		8633	9314	7378	7922	405	408	599	52	251	932
Industrial Rd	E. of HC Road		4362	3864	3613	3596	45	56	697	185	7	27
	W. of HC Road		4490	3594	4310	3115	179	210	0	0	0	269
EC Row N. Ramp Terminal	E. of HC Road (E-N/S Off Ramp & S-W On Ramp)		16852	2214	15527	1966	327	6	998	242	0	0
	W. of HC Road (N-W On Ramp)		624	0	389	0	11	0	48	0	176	0
EC Row S. Ramp Terminal	E. of HC Road (S-E On Ramp)		0	12051	0	11928	0	124	0	0	0	0
	W. of HC Road (N-E On Ramp & W-N/S Off Ramp)		10047	3314	8650	2901	325	91	465	322	607	0
					WB	EB	WB	EB	WB	EB	WB	EB
Labelle St/Bethlehem Ave	E. of N. Service Rd		3336	2617	3077	2391	0	0	259	226	0	0
	between N. and S. Service Rd		1573	3934	1573	3822	0	0	0	112	0	0
	W. of S. Service Rd		2055	3283	2053	3279	0	0	2	4	0	0
Grand Marais Rd/Lambton Rd	E. of HC Rd		5010	3929	4753	3657	0	0	257	272	0	0
	W. of HC Rd		2056	2428	1973	2362	37	25	46	41	0	0
Pulford St	E. of HC Rd		2876	2107	2549	1878	0	0	327	230	0	0
Todd Ln/Cabana Rd	E. of HC Rd		10586	8495	10025	7623	0	0	561	872	0	0
	between HC Rd and Hwy 401 Off-ramp		9181	19292	9169	19275	0	0	12	17	0	0
	W. of Hwy 401 Off-ramp		13727	13505	13709	13492	0	0	18	12	0	0
Huron Church Line	W. of HC Rd		9041	7983	8500	7407	120	122	422	455	0	0
St Clair College	E. of Talbot Rd		3428	9882	3328	9597	0	0	100	286	0	0
Cousineau Dr	E. of Talbot Rd		6470	5725	5252	4495	0	0	1218	1230	0	0
	W. of Talbot Rd		8816	7424	8816	7416	0	8	0	0	0	0
Howard Ave	E. of Talbot Rd		9246	9953	9089	9762	157	187	0	4	0	0
	W. of Talbot Rd		8179	10157	7987	9906	172	224	20	27	0	0
Laurier Extension	W. of Talbot Rd/Hwy 3		7881	8274	7715	8091	165	183	0	0	0	0
EC Row Expressway	E. of Huron Church Rd		49128	56156	42770	45577	897	1024	3995	7217	1466	2338
	W. of Malden Rd		36660	33578	35313	31763	845	1386	272	344	229	86
	W. of Matchette		27855	25045	26963	24357	532	419	360	269	0	0
GN Booth Dr	W. of Ojibway Pwy		357	461	345	448	7	8	5	5	0	0
Sandwich St	W. of Ojibway Pwy		1775	1630	1598	1499	156	102	21	29	0	0
Prospect Ave	W. of Ojibway Pwy		342	437	331	425	7	5	4	7	0	0

TABLE A-4 CONT'D.

HIGHWAY 401 Mainline									
			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
S. of Hwy 3 merge/split	28867	32317	16565	14965	699	801	3761	3747	7841
N. of Howard Ave	21434	29449	10293	11792	149	690	4139	4840	6853
At Grand Marais Rd	27665	40606	16371	20616	416	434	4619	6262	6259
E. of Malden Rd	8751	15479	1743	2549	52	63	1630	3053	5326
To/From Canadian Plaza	14748	24132	1	5	3	4	5779	10031	8965

HIGHWAY 401 Ramps									
Hwy 3 merge/split			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB Off Ramp (prior to Highway 3 / Laurier split)	16787	0	13245		284		2150		1107
401 NB On Ramp	9298	0	9120		178		0		0
401 SB Off Ramp	0	9309		9131		178		0	
401 SB On Ramp	0	6996		4978		125		1462	
At Howard Ave	0	0	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB On Ramp	795	0	780		15		0		0
401 SB On Ramp	0	5488		3905		98		1146	
At St. Clair College	0	0	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB Off Ramp	5297	0	5247		49		0		0
401 SB Off Ramp (direct ramp to Hwy 3)	0	7431		6480		76		875	
401 SB On Ramp	0	6223		6186		37		0	
At Todd Ln / Cabana Rd			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB On Ramp	10643	0	9265		146		1232		0
401 SB Off Ramp (direct ramp to Todd lane)	0	9590		8362		98		1130	
At Huron Church Rd			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB Off Ramp	18688	0	15412		382		2894		0
401 SB On Ramp	0	24870		19414		391		2949	
EC Row Expressway EB to Hwy 401			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB On Ramp from EC ROW EB	1805	0	0		0		1413		392
Hwy 401 to EC Row Expressway WB			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 SB Off Ramp to EC Row WB	0	1479	0	0		0		1140	
EC Row Expressway WB to Hwy 401			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB On Ramp from EC ROW WB	3029	0	0		0		1865		1164
Hwy 401 to EC Row Expressway EB / Huron Church Road			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 SB Off Ramp to EC Row EB / Huron Church Rd	0	5890	0	0	0	0	0	4541	0
At Malden Rd			NB / WB	SB / EB	NB / WB	SB / EB	NB / WB	SB / EB	NB / WB
401 NB On Ramp	591	0	0		0		463		128
401 SB Off Ramp	0	1232	0	0		0		950	

	FROM	TO									
Highway 401 Mainline Vol	S. of Hwy 3 merge/split	Hwy 3/ 401 NB Off Ramp	28867	0	16461		491		3865		8049
	Hwy 3/ 401 NB Off Ramp	Hwy 3/401 NB On Ramp	12071	0	3912		173		2508		5478
	Hwy 3/401 NB On Ramp	Howard NB On Ramp	21434	0	10618		360		3814		6642
	Howard NB On Ramp	St. Clair/401 NB Off Ramp	22229	0	11398		375		3814		6642
	St. Clair/401 NB Off Ramp	Pulford/401 NB On Ramp	15990	0	8027		275		3088		4600
	Pulford/401 NB On Ramp	HC Rd/401 NB Off Ramp	27665	0	16371		416		4619		6259
	HC Rd/401 NB Off Ramp	EC Row EB to 401 NB On Ramp	8751	0	1743		52		1630		5326
	C Row EB to 401 NB On Ran	EC Row WB to 401 NB On Ramp	10640	0	0		0		3737		6903
	C Row WB to 401 NB On Ran	Malden/401 NB On Ramp	14608	0	0		0		5131		9478
	Malden/401 NB On Ramp	Canadian Plaza	14744	0	0		0		5779		8965
	Canadian Plaza	Malden/401 SB Off Ramp	0	24132		5		4		10031	
	Malden/401 SB Off Ramp	401 SB to EC Row EB / HC Rd Off-ramp	0	22846		5		3		9426	
	B to EC Row EB / HC Rd Off	401 SB to EC Row WB Off-ramp	0	16214		3		2		6690	
	01 SB to EC Row WB Off-ram	HC Rd/401 SB On Ramp	0	14549		3		2		6003	
	HC Rd/401 SB On Ramp	Pulford/401 SB Off Ramp	0	40606		20616		434		6262	
	Pulford/401 SB Off Ramp	St Clair/401 SB Off Ramp	0	29962		15212		320		4621	
	St Clair/401 SB Off Ramp	St Clair/401 SB On Ramp	0	22443		8963		240		3686	
	St Clair/401 SB On Ramp	Howard SB On Ramp	0	29449		12283		303		4349	
	Howard SB On Ramp	Hwy 3/401 SB Off Ramp	0	33686		16236		381		4216	
	Hwy 3/401 SB Off Ramp	Hwy 3/401 SB On Ramp	0	23741		9881		237		2963	
	Hwy 3/401 SB On Ramp	S. of Hwy 3 merge/split	0	32317		14855		349		3857	

Malden	Chappus	401 S. Ramp	9447	12207	8232	10979	365	456	851	772	0
	401 S. Ramp	401 N. Ramp	10678	7440	9326	6705	410	275	941	460	0
	N. of 401 N. Ramp		7149	8393	6252	7560	274	311	622	522	0
Matchette	Chappus	EC Row S. Ramp	9542	10489	9486	10131	0	0	56	359	0
	EC Row S. Ramp	EC Row N. Ramp	2675	11452	2641	10945	0	0	34	507	0
	EC Row N. Ramp	Carmichael	5719	3318	5681	2975	0	0	39	343	0

TABLE A- 5 24-HOUR ANNUAL AVERAGE DAILY TRAFFIC (AADT) FOR NO BUILD – YEAR 2015

Street	From	To	Direction	Local Car	Local Truc	Inter. Car	Inter. Truck	Total Vehic	Total Cars	Total Truck
Huron Church	College	AMB	NB	0	0	12185	9372	21557	12185	9372
	AMB	College	SB	6785	276	10081	10048	27190	16866	10324
	College	Millen	SB	10821	418	8217	9363	28818	19038	9780
	Millen	College	NB	12266	380	7124	5796	25566	19390	6176
	Girardot	Millen	NB	12366	385	7153	5813	25717	19519	6197
	Millen	Girardot	SB	10845	419	8188	9360	28812	19033	9779
	Girardot	Tecumseh	SB	14104	582	6660	7667	29013	20764	8249
	Tecumseh	Girardot	NB	14854	598	6175	5204	26831	21029	5802
	Ambassador Plaza	Tecumseh	NB	15158	608	6360	5365	27491	21518	5973
	Tecumseh	Ambassador Plaza	SB	13928	575	6577	7571	28652	20506	8146
	Ambassador Plaza	Dorchester	SB	14102	589	6449	7459	28600	20551	8049
	Dorchester	Ambassador Plaza	NB	15677	633	6331	5362	28003	22008	5995
	Totten/Prince	Dorchester	NB	17538	610	6124	5254	29526	23662	5864
	Dorchester	Totten/Prince	SB	16007	552	6163	7095	29817	22170	7647
	Totten/Prince	Malden	SB	18391	633	6999	8071	34095	25390	8705
	Malden	Totten/Prince	NB	19390	668	6686	5736	32480	26076	6404
	Industrial	Malden	NB	17738	696	7454	6513	32401	25192	7209
	Malden	Industrial	SB	15701	667	7521	9371	33260	23222	10038
	Industrial	ECR N Ramp	SB	20812	857	7250	9396	38315	28061	10253
	ECR N Ramp	Industrial	NB	21493	787	6950	6207	35436	28443	6993
	ECR S Ramp	ECR N Ramp	NB	14097	447	5112	6529	26185	19209	6976
	ECR N Ramp	ECR S Ramp	SB	27588	889	7750	9810	46038	35339	10699
	ECR S Ramp	Labelle	SB	16560	356	4547	7989	29451	21107	8344
	Labelle	ECR S Ramp	NB	20559	423	5026	5957	31965	25585	6380
	Grand Marais	Labelle	NB	16603	438	4939	5944	27924	21542	6382
	Labelle	Grand Marais	SB	14555	370	4674	8412	28011	19229	8782
	Grand Marais	Pulford	SB	15124	316	4359	8418	28218	19484	8734
	Pulford	Grand Marais	NB	15068	376	4570	5771	25785	19638	6147
	Reddock	Pulford	NB	15015	383	4556	5886	25840	19571	6269
	Pulford	Reddock	SB	15195	323	4358	8633	28509	19553	8955
	Reddock	Todd/Cabana	SB	15225	323	4428	8707	28682	19653	9029
	Todd/Cabana	Reddock	NB	15007	383	4552	5878	25820	19559	6260
	Huron Church Line	Todd/Cabana	NB	15497	307	3056	4635	23495	18553	4942
	Todd/Cabana	Huron Church Line	SB	14238	229	2368	6314	23149	16607	6542
Talbot	Huron Church Line	St. Clair College	EB	9693	184	2039	6374	18289	11732	6557
	St. Clair College	Huron Church Line	WB	8923	205	2388	4025	15541	11311	4230
	Cousineau	St. Clair College	WB	11852	269	3251	5612	20984	15102	5881
	St. Clair College	Cousineau	EB	8881	166	2008	6133	17188	10889	6299
	Cousineau	Montgomery	EB	8330	173	1627	5215	15345	9957	5388
	Montgomery	Cousineau	WB	11363	287	2637	4536	18822	13999	4823
	Surrey	Montgomery	WB	11166	281	2598	4482	18528	13764	4764
	Montgomery	Surrey	EB	8212	171	1606	5145	15134	9818	5316
	Surrey	Grosvenor	EB	8896	175	1332	4528	14931	10228	4703
	Grosvenor	Surrey	WB	11839	293	2203	4061	18397	14042	4354
	Howard	Grosvenor	WB	11842	293	2203	4059	18396	14045	4352
	Grosvenor	Howard	EB	8856	175	1328	4513	14871	10184	4687
	Howard	Hwy3/401	EB	11244	248	1031	3889	16411	12275	4136
	Hwy3/401	Howard	WB	13895	353	1610	3205	19063	15505	3558
Hwy3	HWY 401	Outer	WB	10800	236	685	440	12162	11485	677
	Outer	Hwy 401	EB	6895	174	663	354	8086	7558	528
Howard	6th Conc.	South Talbot	SB	3882	115	14	0	4011	3896	115
	South Talbot	6th Conc.	NB	3998	102	12	0	4113	4010	102
	6th Conc.	Eastbourne	NB	5812	149	17	0	5978	5830	149
	Eastbourne	6th Conc.	SB	5650	167	21	0	5838	5671	167
	Talbot	Eastbourne	SB	6029	160	28	0	6218	6057	160
	Eastbourne	Talbot	NB	5823	140	24	0	5986	5846	140
	Talbot	Lake Trail	NB	8038	134	154	36	8362	8192	170
	Lake Trail	Talbot	SB	7930	152	186	9	8277	8116	161
	North Talbot	Lake Trail	SB	8032	164	125	9	8329	8157	172
	Lake Trail	North Talbot	NB	8096	137	113	33	8378	8209	169
	North Talbot	Tuson	NB	13501	227	182	52	13961	13682	279
	Tuson	North Talbot	SB	11605	239	193	13	12050	11797	253
	Dougal Ramp	Tuson	SB	12072	201	185	0	12458	12257	201
	Tuson	Dougal Ramp	NB	13877	193	195	0	14265	14072	193
	Dougal Ramp	Wallace	NB	7676	148	242	53	8119	7918	201
	Wallace	Dougal Ramp	SB	5676	116	277	62	6132	5954	178
E.C. Row	Matchette	Huron Church	EB	21754	485	223	358	22821	21977	843
	Huron Church	Matchette	WB	22791	489	84	66	23429	22874	555
	Matchette	Ojibway	SB	14871	419	0	55	15346	14871	474
	Ojibway	Matchette	NB	15162	436	0	326	15924	15162	762
Ojibway	E.C. Row	Broadway	SB	14202	332	818	0	15352	15020	332
	Broadway	E.C. Row	NB	19446	468	1681	10	21605	21127	478
	E.C. Row	GN Booth	NB	9021	118	1087	65	10292	10109	183
	GN Booth	E.C. Row	SB	8928	110	898	310	10246	9826	420
	Sandwich	GN Booth	SB	8899	109	919	287	10215	9818	397
	GN Booth	Sandwich	NB	8937	117	1067	66	10187	10004	183
Sandwich	Ojibway	Prospect	NB	9134	71	1246	0	10452	10380	71
	Prospect	Ojibway	SB	9002	64	1037	0	10103	10039	64
College	Felix	Huron Church	EB	3199	0	1265	0	4465	4465	0
	Huron Church	Felix	WB	2592	0	1105	0	3697	3697	0
	California	Huron Church	WB	4590	127	3	0	4720	4593	127
	Huron Church	California	EB	5004	94	1334	602	7035	6339	696
Millen	Felix	Huron Church	EB	107	2	2	0	111	109	2
	Huron Church	Felix	WB	280	5	4	0	289	284	5
Girardot	Felix	Huron Church	EB	891	19	16	0	926	907	19
	Huron Church	Felix	WB	1776	33	25	0	1834	1801	33
Tecumseh	Felix	Huron Church	EB	6687	0	292	0	6979	6979	0
	Huron Church	Felix	WB	5627	0	272	0	5899	5899	0
	California	Huron Church	WB	7159	172	570	682	8582	7728	854
	Huron Church	California	EB	9797	244	482	814	11338	10279	1058
Dorchester	Felix	Huron Church	EB	885	21	14	0	920	899	21
	Huron Church	Felix	WB	1574	30	23	0	1627	1597	30
Prince/Totten	Dorchester	Huron Church	EB	2652	0	33	0	2685	2685	0
	Huron Church	Dorchester	WB	2943	0	34	0	2977	2977	0
	California	Huron Church	WB	2283	0	86	0	2369	2369	0
	Huron Church	California	EB	2285	0	95	0	2380	2380	0
Malden	Ambassador Dr	Huron Church	EB	4608	251	346	338	5543	4953	590
	Huron Church	Ambassador Dr	WB	5017	241	371	333	5962	5388	574
	Daytona	Huron Church	WB	2984	0	420	0	3405	3405	0
	Huron Church	Daytona	EB	2507	0	421	0	2928	2928	0
Industrial	Ambassador Dr	Huron Church	EB	2603	242	0	10	2854	2603	251
	Huron Church	Ambassador Dr	WB	4878	221	0	136	5234	4878	357
	Daytona	Huron Church	WB	3600	65	108	7	3780	3708	72
	Huron Church	Daytona	EB	2733	43	90	21	2887	2823	64
Labelle	Youngstown	Huron Church	WB	3172	0	347	0	3519	3519	0
	Huron Church	Youngstown	EB	1948	0	248	0	2196	2196	0
Spring Garden	5th	Huron Church	EB	10737	0	0	0	10737	10737	0
	Huron Church	5th	WB	12284	0	0	0	12284	12284	0
Grand Marais	Northway	Huron Church	WB	4580	0	164	0	4744	4744	0
	Huron Church	Northway	EB	3155	0	173	0	3328	3328	0
Lambton	Fazio	Huron Church	EB	8004	148	147	0	8299	8151	148
	Huron Church	Fazio	WB	9182	197	154	0	9534	9336	197
Pulford	Northway	Huron Church	WB	1475	0	209	0	1685	1685	0
	Huron Church	Northway	EB	1490	0	219	0	1709	1709	0
Reddock		Huron Church	EB	115	2	2	0	120	117	2
	Huron Church		WB	124	2	2	0	128	125	2
Todd	10th	Huron Church	EB	10758	0	2	0	10760	10760	0
	Huron Church	10th	WB	9674	0	3	0	9676	9676	0
Cabana	Daytona	Huron Church	WB	7563	0	645	0	8208	8208	0
	Huron Church	Daytona	EB	8292	0	911	0	9203	9203	0
uron Church Lin	Normandy	Talbot	NB	6993	146	179	39	7357	7172	186
	Talbot	Normandy	SB	8669	129	59	0	8858	8729	129
St. Clair College		Talbot	SB	3223	0	0	0	3223	3223	0
	Talbot		NB	10745	0	0	0	10745	10745	0
Cousineau	Heritage	Talbot	NB	8346	372	0	0	8718	8346	372
	Talbot	Heritage	SB	7778	349	0	0	8127	7778	349
	Mt. Royal	Talbot	SB	4253	0	303	0	4555	4555	0
	Talbot	Mt. Royal	NB	4641	0	346	0	4987	4987	0
Montgomery	Surrey	Talbot	NB	150	3	3	0	157	153	3
	Talbot	Surrey	SB	86	2	1	0	89	87	2
Surrey	Montgomery	Talbot	NB	81	2	1	0	84	82	2
	Talbot	Montgomery	SB	152	3	2	0	157	155	3
Grosvenor	Montgomery	Talbot	NB	142	3	3	0	148	145	3
	Talbot	Montgomery	SB	246	4	3	0	254	250	4
Outer	S. Talbot	Hwy 3	NB	603	12	12	0	627	614	12
	Hwy 3	S. Talbot	SB	563	10	8	0	580	571	10
	Blackacre	Hwy 3	SB	3247	89	33	0	3369	3281	89
	Hwy 3	Blackacre	NB	2313	51	35	0	2399	2348	51
6th Conc.	Montgomery	Howard	EB	3039	46	5	0	3089	3043	46
	Howard	Montgomery	WB	2686	45	7	0	2739	2693	45
Eastbourne	Montgomery	Howard	EB	404	9	7	0	420	411	9
	Howard	Montgomery	WB	375	6	5	0	387	381	6
Roseland	Kennedy	Howard	EB	1726	41	27	0	1794	1753	41
	Howard	Kennedy	WB	2442	46	35	0	2522	2476	46
North Talbot	Southwood Lakes	Howard	WB	7354	77	82	11	7524	7436	88
	Howard	Southwood Lakes	EB	5184	75	148	32	5439	5332	106
Tuson	Howard	Howard	WB	0	0	0	0	0	0	0
	Howard	Howard	EB	559	12	0	0	571	559	12
Matchette	Chappus	EC Row	NB	8515	0	377	0	8892	8892	0
	EC Row	Chappus	SB	6052	0	388	0	6441	6441	0
	Carmichael	EC Row	SB	4101	0	526	0	4626	4626	0
	EC Row	Carmichael	NB	7321	0	534	0	7855	7855	0
GN Booth		EC Row	NB	499	13	5	0	518	505	13
	EC Row		SB	399	8	6	0	413	405	8

TABLE A- 6 24-HOUR ANNUAL AVERAGE DAILY TRAFFIC (AADT) FOR NO BUILD – YEAR 2025

Street	From	To	Direction	Local Car	Local Truck	Inter. Car	Inter. Truck	Total Vehicl	Total Cars	Total Truck
Huron Church	College	AMB	NB	0	0	12289	10289	22578	12289	10289
	AMB	College	SB	5547	252	10807	12373	28979	16354	12625
	College	Millen	SB	9066	418	9326	11705	30515	18392	12123
	Millen	College	NB	11405	383	7918	7025	26731	19323	7408
	Girardot	Millen	NB	11395	384	7870	6983	26632	19265	7367
	Millen	Girardot	SB	9104	420	9294	11712	30530	18398	12132
	Girardot	Tecumseh	SB	12971	584	7235	10252	31043	20206	10837
	Tecumseh	Girardot	NB	14070	624	6786	6634	28114	20855	7259
	Ambassador Plaza	Tecumseh	NB	14422	637	7023	6877	28959	21445	7514
	Tecumseh	Ambassador Plaza	SB	12735	574	7113	10072	30494	19848	10646
	Ambassador Plaza	Dorchester	SB	12917	591	7006	9952	30467	19924	10543
	Dorchester	Ambassador Plaza	NB	14755	661	6989	6872	29277	21744	7533
	Totten/Prince	Dorchester	NB	16856	637	6736	6698	30927	23591	7335
	Dorchester	Totten/Prince	SB	14887	565	6716	9580	31748	21603	10145
	Totten/Prince	Malden	SB	17197	650	7644	10921	36412	24840	11572
	Malden	Totten/Prince	NB	18672	698	7353	7313	34035	26025	8011
	Industrial	Malden	NB	16654	737	8164	8507	34062	24817	9244
	Malden	Industrial	SB	14272	666	7762	13010	35710	22034	13676
	Industrial	ECR N Ramp	SB	20823	889	7825	12951	42488	28648	13840
	ECR N Ramp	Industrial	NB	21003	842	7565	7908	37317	28567	8750
	ECR S Ramp	ECR N Ramp	NB	14727	465	5779	8302	29272	20506	8767
	ECR N Ramp	ECR S Ramp	SB	28731	929	8170	13162	50992	36902	14090
	ECR S Ramp	Labelle	SB	17414	354	4862	9877	32507	22276	10230
	Labelle	ECR S Ramp	NB	22296	449	5448	7422	35615	27744	7871
	Grand Marais	Labelle	NB	18047	466	5364	7391	31268	23411	7856
	Labelle	Grand Marais	SB	14967	371	5107	10475	30920	20074	10846
	Grand Marais	Pulford	SB	15959	302	4679	10146	31085	20637	10448
	Pulford	Grand Marais	NB	16392	400	4973	7146	28910	21365	7545
	Reddock	Pulford	NB	16373	406	4960	7268	29006	21332	7674
	Pulford	Reddock	SB	16055	308	4687	10366	31416	20742	10674
	Reddock	Todd/Cabana	SB	16051	308	4790	10451	31599	20840	10759
	Todd/Cabana	Reddock	NB	16376	406	4955	7255	28992	21331	7661
	Huron Church Line	Todd/Cabana	NB	17354	345	2799	5969	26468	20153	6314
	Todd/Cabana	Huron Church Line	SB	14793	209	2339	7205	24546	17132	7414
Talbot	Huron Church Line	St. Clair College	EB	9178	171	2087	8118	19554	11265	8289
	St. Clair College	Huron Church Line	WB	8700	212	2045	5100	16057	10746	5311
	Cousineau	St. Clair College	WB	11746	282	2880	7359	22267	14625	7642
	St. Clair College	Cousineau	EB	8409	154	2065	7769	18396	10474	7923
	Cousineau	Montgomery	EB	7850	161	1643	6524	16178	9493	6684
	Montgomery	Cousineau	WB	11212	294	2268	5840	19615	13480	6135
	Surrey	Montgomery	WB	10871	285	2209	5703	19068	13080	5988
	Montgomery	Surrey	EB	7738	158	1621	6435	15953	9360	6593
	Surrey	Grosvenor	EB	8669	165	1321	5499	15654	9990	5664
	Grosvenor	Surrey	WB	11703	295	1816	5072	18887	13519	5367
	Howard	Grosvenor	WB	11710	296	1816	5070	18892	13526	5365
	Grosvenor	Howard	EB	8696	165	1328	5524	15712	10023	5689
	Howard	Hwy3/401	EB	11215	238	1052	4927	17431	12266	5165
	Hwy3/401	Howard	WB	14194	363	1271	3967	19795	15465	4330
Hwy3	HWY 401	Outer	WB	10107	218	649	544	11518	10756	762
	Outer	Hwy 401	EB	7099	177	741	373	8390	7840	550
Howard	6th Conc.	South Talbot	SB	4244	129	18	0	4391	4263	129
	South Talbot	6th Conc.	NB	4389	106	16	0	4512	4406	106
	6th Conc.	Eastbourne	NB	6380	154	23	0	6557	6404	154
	Eastbourne	6th Conc.	SB	6178	187	27	0	6392	6205	187
	Talbot	Eastbourne	SB	6596	172	39	0	6807	6635	172
	Eastbourne	Talbot	NB	6391	142	33	0	6566	6424	142
	Talbot	Lake Trail	NB	8833	140	162	47	9181	8995	186
	Lake Trail	Talbot	SB	8678	164	215	10	9066	8893	174
	North Talbot	Lake Trail	SB	8787	177	150	9	9124	8938	186
	Lake Trail	North Talbot	NB	8893	143	118	44	9198	9011	187
	North Talbot	Tuson	NB	14827	238	189	69	15323	15016	307
	Tuson	North Talbot	SB	12690	258	232	15	13195	12922	273
	Dougal Ramp	Tuson	SB	13179	228	237	0	13644	13416	228
	Tuson	Dougal Ramp	NB	15207	223	220	2	15651	15426	224
	Dougal Ramp	Wallace	NB	8211	161	265	361	8999	8477	522
	Wallace	Dougal Ramp	SB	5802	120	295	633	6849	6096	752
E.C. Row	Matchette	Huron Church	EB	23425	513	712	457	25107	24137	970
	Huron Church	Matchette	WB	24595	494	528	79	25695	25123	573
	Matchette	Ojibway	SB	16312	446	0	68	16827	16312	515
	Ojibway	Matchette	NB	16582	477	0	424	17483	16582	901
Ojibway	E.C. Row	Broadway	SB	15548	359	917	0	16824	16465	359
	Broadway	E.C. Row	NB	21258	536	1917	12	23722	23174	548
	E.C. Row	GN Booth	NB	9869	125	1219	80	11293	11088	205
	GN Booth	E.C. Row	SB	9792	109	946	401	11248	10738	510
	Sandwich	GN Booth	SB	9763	108	968	372	11210	10731	480
	GN Booth	Sandwich	NB	9776	124	1196	82	11178	10972	206
Sandwich	Ojibway	Prospect	NB	10001	71	1396	0	11468	11397	71
	Prospect	Ojibway	SB	9925	61	1088	0	11074	11013	61
College	Felix	Huron Church	EB	3499	0	1434	0	4932	4932	0
	Huron Church	Felix	WB	2678	0	1340	0	4019	4019	0
	California	Huron Church	WB	4857	165	86	2	5110	4943	167
	Huron Church	California	EB	5155	82	1168	1578	7983	6323	1660
Millen	Felix	Huron Church	EB	117	2	2	0	122	119	2
	Huron Church	Felix	WB	307	5	4	0	316	311	5
Girardot	Felix	Huron Church	EB	978	21	18	0	1017	996	21
	Huron Church	Felix	WB	1946	36	27	0	2010	1973	36
Tecumseh	Felix	Huron Church	EB	6830	0	630	0	7460	7460	0
	Huron Church	Felix	WB	5962	0	465	0	6427	6427	0
	California	Huron Church	WB	8255	180	364	420	9220	8619	601
	Huron Church	California	EB	10726	266	902	338	12232	11629	604
Dorchester	Felix	Huron Church	EB	970	23	15	0	1008	985	23
	Huron Church	Felix	WB	1726	33	25	0	1785	1751	33
rince/Totte	Dorchester	Huron Church	EB	2915	0	28	0	2943	2943	0
	Huron Church	Dorchester	WB	3241	0	28	0	3268	3268	0
	California	Huron Church	WB	2503	0	94	0	2597	2597	0
	Huron Church	California	EB	2511	0	95	0	2606	2606	0
Malden	Ambassador Dr	Huron Church	EB	5091	236	381	371	6078	5472	606
	Huron Church	Ambassador Dr	WB	5322	249	490	490	6552	5813	739
	Daytona	Huron Church	WB	2992	0	751	0	3743	3743	0
	Huron Church	Daytona	EB	2269	0	856	0	3125	3125	0
Industrial	Ambassador Dr	Huron Church	EB	2864	252	0	12	3128	2864	264
	Huron Church	Ambassador Dr	WB	5430	271	0	0	5701	5430	271
	Daytona	Huron Church	WB	3614	57	522	7	4200	4136	64
	Huron Church	Daytona	EB	3004	46	95	30	3175	3099	76
Labelle	Youngstown	Huron Church	WB	3467	0	394	0	3861	3861	0
	Huron Church	Youngstown	EB	2120	0	286	0	2406	2406	0
pring Gard	5th	Huron Church	EB	10736	0	1	0	10737	10737	0
	Huron Church	5th	WB	12284	0	0	0	12284	12284	0
rand Mara	Northway	Huron Church	WB	5094	0	137	0	5231	5231	0
	Huron Church	Northway	EB	3464	0	187	0	3651	3651	0
Lambton	Fazio	Huron Church	EB	8348	154	147	0	8649	8495	154
	Huron Church	Fazio	WB	10311	220	86	0	10616	10397	220
Pulford	Northway	Huron Church	WB	1615	0	235	0	1850	1850	0
	Huron Church	Northway	EB	1638	0	239	0	1877	1877	0
Reddock		Huron Church	EB	126	3	2	0	132	129	3
	Huron Church		WB	136	2	2	0	140	137	2
Todd	10th	Huron Church	EB	11797	0	2	0	11799	11799	0
	Huron Church	10th	WB	10599	0	1	0	10601	10601	0
Cabana	Daytona	Huron Church	WB	7459	0	1345	0	8805	8805	0
	Huron Church	Daytona	EB	8877	0	1136	0	10013	10013	0
on Church	Normandy	Talbot	NB	7412	157	192	397	8158	7605	554
	Talbot	Normandy	SB	9472	153	75	0	9700	9547	153
Clair Colle		Talbot	SB	3530	0	0	0	3530	3530	0
	Talbot		NB	11808	0	0	0	11808	11808	0
Cousineau	Heritage	Talbot	NB	9170	389	0	0	9559	9170	389
	Talbot	Heritage	SB	8563	335	0	0	8899	8563	335
	Mt. Royal	Talbot	SB	4620	0	359	0	4979	4979	0
	Talbot	Mt. Royal	NB	5118	0	356	0	5474	5474	0
Montgomer	Surrey	Talbot	NB	165	3	3	0	172	168	3
	Talbot	Surrey	SB	94	2	1	0	97	95	2
Surrey	Montgomery	Talbot	NB	89	2	2	0	92	90	2
	Talbot	Montgomery	SB	167	3	2	0	172	169	3
Grosvenor	Montgomery	Talbot	NB	156	3	3	0	162	159	3
	Talbot	Montgomery	SB	270	5	4	0	278	273	5
Outer	S. Talbot	Hwy 3	NB	928	21	15	0	965	944	21
	Hwy 3	S. Talbot	SB	257	5	4	0	266	261	5
	Blackacre	Hwy 3	SB	1008	23	16	0	1047	1024	23
	Hwy 3	Blackacre	NB	3981	78	57	0	4116	4038	78
6th Conc.	Montgomery	Howard	EB	3330	49	6	0	3386	3336	49
	Howard	Montgomery	WB	2942	48	10	0	3000	2952	48
Eastbourne	Montgomery	Howard	EB	443	10	7	0	461	451	10
	Howard	Montgomery	WB	411	7	6	0	424	417	7
Roseland	Kennedy	Howard	EB	1892	44	29	0	1966	1922	44
	Howard	Kennedy	WB	2677	51	38	0	2765	2715	51
North Talbo	Southwood Lakes	Howard	WB	8029	102	101	15	8248	8131	117
	Howard	Southwood Lakes	EB	5669	95	155	43	5962	5824	138
Tuson	Howard	Howard	WB	0	0	0	0	0	0	0
	Howard	Howard	EB	615	10	0	0	625	615	10
Matchette	Chappus	EC Row	NB	9268	0	445	0	9713	9713	0
	EC Row	Chappus	SB	6618	0	429	0	7048	7048	0
	Carmichael	EC Row	SB	3979	0	986	0	4965	4965	0
	EC Row	Carmichael	NB	7161	0	1079	0	8239	8239	0
GN Booth		EC Row	NB	546	15	6	0	567	552	15
	EC Row		SB	438	9	7	0	454	445	9

TABLE A- 7 24-HOUR ANNUAL AVERAGE DAILY TRAFFIC (AADT) FOR NO BUILD – YEAR 2035

Street	From	To	Direction	Local Car	Local Truc	Inter. Car	Inter. Truc	Total Vehic	Total Cars	Total Truck
Huron Church	College	AMB	NB	0	0	12184	11573	23757	12184	11573
	AMB	College	SB	4961	240	11343	13312	29857	16305	13552
	College	Millen	SB	8370	401	9170	13840	31781	17540	14241
	Millen	College	NB	10445	404	8422	8721	27993	18868	9125
	Girardot	Millen	NB	10355	401	8302	8595	27653	18657	8996
	Millen	Girardot	SB	8419	404	9140	13853	31816	17560	14257
	Girardot	Tecumseh	SB	12142	609	7236	12542	32530	19378	13151
	Tecumseh	Girardot	NB	13516	643	7124	8023	29306	20640	8666
	Ambassador Plaza	Tecumseh	NB	13904	659	7405	8358	30326	21309	9017
	Tecumseh	Ambassador Plaza	SB	11847	594	7066	12243	31750	18913	12837
	Ambassador Plaza	Dorchester	SB	12063	615	6971	12115	31763	19033	12729
	Dorchester	Ambassador Plaza	NB	14130	681	7336	8320	30467	21466	9001
	Totten/Prince	Dorchester	NB	16521	646	7013	8051	32232	23534	8698
	Dorchester	Totten/Prince	SB	14375	582	6583	11541	33081	20957	12123
	Totten/Prince	Malden	SB	16668	672	7527	13210	38078	24195	13883
	Malden	Totten/Prince	NB	18324	708	7658	8793	35483	25982	9501
	Industrial	Malden	NB	15987	706	8464	10607	35764	24451	11313
	Malden	Industrial	SB	14640	718	7570	14061	36989	22210	14779
	Industrial	ECR N Ramp	SB	21474	952	7532	15658	45617	29006	16611
	ECR N Ramp	Industrial	NB	20631	837	7905	9684	39058	28537	10521
	ECR S Ramp	ECR N Ramp	NB	14767	469	5977	9936	31151	20745	10406
	ECR N Ramp	ECR S Ramp	SB	30036	1004	7872	15949	54861	37908	16953
	ECR S Ramp	Labelle	SB	17860	380	4690	11902	34831	22549	12282
	Labelle	ECR S Ramp	NB	22930	459	5716	9017	38122	28646	9476
	Grand Marais	Labelle	NB	18367	471	5580	8875	33294	23947	9347
	Labelle	Grand Marais	SB	15258	398	4910	12624	33191	20169	13022
	Grand Marais	Pulford	SB	16402	330	4452	12167	33350	20854	12496
	Pulford	Grand Marais	NB	16774	404	5144	8479	30801	21918	8883
	Reddock	Pulford	NB	16769	410	5124	8607	30910	21893	9017
	Pulford	Reddock	SB	16517	336	4443	12415	33711	20960	12750
	Reddock	Todd/Cabana	SB	16559	336	4575	12583	34054	21134	12920
	Todd/Cabana	Reddock	NB	16765	409	5114	8580	30868	21878	8989
	Huron Church Line	Todd/Cabana	NB	18155	350	2692	7027	28224	20847	7377
	Todd/Cabana	Huron Church Line	SB	15450	222	2197	8411	26280	17647	8633
Talbot	Huron Church Line	St. Clair College	EB	8917	189	1851	10197	21154	10768	10386
	St. Clair College	Huron Church Line	WB	8466	207	1928	6130	16730	10393	6337
	Cousineau	St. Clair College	WB	11492	279	2757	8941	23469	14249	9220
	St. Clair College	Cousineau	EB	8095	167	1901	9752	19915	9996	9919
	Cousineau	Montgomery	EB	7754	172	1399	8047	17372	9153	8219
	Montgomery	Cousineau	WB	11190	292	2123	6943	20548	13313	7236
	Surrey	Montgomery	WB	10687	279	2049	6729	19743	12736	7008
	Montgomery	Surrey	EB	7642	170	1381	7938	17131	9024	8107
	Surrey	Grosvenor	EB	8707	174	1146	6717	16745	9853	6891
	Grosvenor	Surrey	WB	11574	293	1664	6015	19546	13238	6308
	Howard	Grosvenor	WB	11584	293	1664	6013	19554	13248	6306
	Grosvenor	Howard	EB	8755	175	1156	6765	16851	9912	6940
	Howard	Hwy3/401	EB	11639	258	893	5806	18595	12532	6063
	Hwy3/401	Howard	WB	14459	369	1125	4634	20587	15583	5003
Hwy3	HWY 401	Outer	WB	10333	222	638	731	11924	10971	953
	Outer	Hwy 401	EB	7400	178	834	477	8889	8234	655
Howard	6th Conc.	South Talbot	SB	4563	146	21	0	4730	4584	146
	South Talbot	6th Conc.	NB	4709	127	18	0	4854	4727	127
	6th Conc.	Eastbourne	NB	6846	184	26	0	7055	6871	184
	Eastbourne	6th Conc.	SB	6642	212	31	0	6884	6673	212
	Talbot	Eastbourne	SB	7089	189	52	0	7329	7140	189
	Eastbourne	Talbot	NB	6859	162	40	0	7061	6899	162
	Talbot	Lake Trail	NB	9527	165	158	36	9886	9685	201
	Lake Trail	Talbot	SB	9306	184	263	13	9766	9570	197
	North Talbot	Lake Trail	SB	9436	194	187	13	9830	9623	207
	Lake Trail	North Talbot	NB	9553	157	151	31	9891	9704	187
	North Talbot	Tuson	NB	15928	261	243	49	16481	16171	310
	Tuson	North Talbot	SB	13625	285	290	20	14220	13915	304
	Dougal Ramp	Tuson	SB	14138	254	312	0	14704	14451	254
	Tuson	Dougal Ramp	NB	16284	259	296	2	16841	16580	261
	Dougal Ramp	Wallace	NB	8782	197	307	403	9688	9088	600
	Wallace	Dougal Ramp	SB	6196	140	323	731	7390	6519	871
E.C. Row	Matchette	Huron Church	EB	24627	539	1378	576	27120	26006	1115
	Huron Church	Matchette	WB	26118	539	936	95	27688	27054	634
	Matchette	Ojibway	SB	17541	491	0	83	18115	17541	574
	Ojibway	Matchette	NB	17415	509	428	540	18892	17843	1049
Ojibway	E.C. Row	Broadway	SB	16667	402	1056	0	18124	17723	402
	Broadway	E.C. Row	NB	22668	568	2271	15	25523	24939	583
	E.C. Row	GN Booth	NB	10503	124	1380	94	12100	11883	217
	GN Booth	E.C. Row	SB	9808	109	1582	495	11995	11391	605
	Sandwich	GN Booth	SB	9761	108	1622	459	11950	11383	567
	GN Booth	Sandwich	NB	10406	123	1354	95	11978	11759	219
Sandwich	Ojibway	Prospect	NB	10655	69	1567	0	12290	12221	69
	Prospect	Ojibway	SB	9954	60	1767	0	11781	11721	60
College	Felix	Huron Church	EB	3457	0	1890	0	5347	5347	0
	Huron Church	Felix	WB	2517	0	1737	0	4254	4254	0
	California	Huron Church	WB	5281	176	67	0	5525	5349	176
	Huron Church	California	EB	5392	91	1915	877	8275	7306	969
Millen	Felix	Huron Church	EB	126	3	2	0	131	128	3
	Huron Church	Felix	WB	331	6	4	0	341	335	6
Girardot	Felix	Huron Church	EB	1052	22	19	0	1094	1071	22
	Huron Church	Felix	WB	2095	39	29	0	2164	2125	39
Tecumseh	Felix	Huron Church	EB	7470	0	507	0	7978	7978	0
	Huron Church	Felix	WB	6435	0	486	0	6922	6922	0
	California	Huron Church	WB	8603	225	491	538	9857	9094	763
	Huron Church	California	EB	11027	258	1181	815	13282	12208	1073
Dorchester	Felix	Huron Church	EB	1045	24	16	0	1085	1061	24
	Huron Church	Felix	WB	1858	36	27	0	1921	1885	36
Prince/Totten	Dorchester	Huron Church	EB	3143	0	24	0	3167	3167	0
	Huron Church	Dorchester	WB	3490	0	27	0	3517	3517	0
	California	Huron Church	WB	2697	0	99	0	2796	2796	0
	Huron Church	California	EB	2705	0	101	0	2806	2806	0
Malden	Ambassador Dr	Huron Church	EB	5434	254	427	399	6514	5861	653
	Huron Church	Ambassador Dr	WB	5101	225	508	1415	7248	5609	1639
	Daytona	Huron Church	WB	3133	0	749	0	3882	3882	0
	Huron Church	Daytona	EB	2514	0	910	0	3425	3425	0
Industrial	Ambassador Dr	Huron Church	EB	2409	251	0	926	3585	2409	1177
	Huron Church	Ambassador Dr	WB	5804	295	0	42	6141	5804	338
	Daytona	Huron Church	WB	4155	53	265	9	4483	4420	62
	Huron Church	Daytona	EB	2725	36	646	27	3435	3371	63
Labelle	Youngstown	Huron Church	WB	3712	0	430	0	4143	4143	0
	Huron Church	Youngstown	EB	2291	0	300	0	2592	2592	0
Spring Garde	5th	Huron Church	EB	10736	0	1	0	10737	10737	0
	Huron Church	5th	WB	12284	0	0	0	12284	12284	0
Grand Marais	Northway	Huron Church	WB	5499	0	138	0	5637	5637	0
	Huron Church	Northway	EB	3751	0	182	0	3933	3933	0
Lambton	Fazio	Huron Church	EB	8864	164	149	0	9177	9012	164
	Huron Church	Fazio	WB	10544	218	124	0	10885	10668	218
Pulford	Northway	Huron Church	WB	1714	0	266	0	1980	1980	0
	Huron Church	Northway	EB	1755	0	263	0	2018	2018	0
Reddock		Huron Church	EB	136	3	3	0	142	139	3
	Huron Church		WB	146	3	2	0	151	148	3
Todd	10th	Huron Church	EB	12698	0	3	0	12700	12700	0
	Huron Church	10th	WB	11413	0	2	0	11415	11415	0
Cabana	Daytona	Huron Church	WB	8062	0	1473	0	9535	9535	0
	Huron Church	Daytona	EB	9610	0	1263	0	10873	10873	0
ıron Church L	Normandy	Talbot	NB	7947	175	207	459	8788	8154	634
	Talbot	Normandy	SB	10183	163	99	0	10446	10283	163
t. Clair Colleg		Talbot	SB	3802	0	0	0	3802	3802	0
	Talbot		NB	12696	0	0	0	12696	12696	0
Cousineau	Heritage	Talbot	NB	9993	297	0	0	10289	9993	297
	Talbot	Heritage	SB	9256	329	0	0	9585	9256	329
	Mt. Royal	Talbot	SB	5048	0	314	0	5362	5362	0
	Talbot	Mt. Royal	NB	5291	0	577	0	5868	5868	0
Montgomery	Surrey	Talbot	NB	178	4	4	0	185	181	4
	Talbot	Surrey	SB	101	2	1	0	105	103	2
Surrey	Montgomery	Talbot	NB	95	2	2	0	99	97	2
	Talbot	Montgomery	SB	180	3	2	0	186	182	3
Grosvenor	Montgomery	Talbot	NB	168	3	3	0	174	171	3
	Talbot	Montgomery	SB	290	5	4	0	300	294	5
Outer	S. Talbot	Hwy 3	NB	999	23	16	0	1039	1016	23
	Hwy 3	S. Talbot	SB	276	5	4	0	286	280	5
	Blackacre	Hwy 3	SB	1084	25	18	0	1127	1102	25
	Hwy 3	Blackacre	NB	4284	84	62	0	4429	4346	84
6th Conc.	Montgomery	Howard	EB	3581	52	10	0	3643	3591	52
	Howard	Montgomery	WB	3160	51	18	0	3229	3178	51
Eastbourne	Montgomery	Howard	EB	477	11	8	0	496	485	11
	Howard	Montgomery	WB	443	8	6	0	456	449	8
Roseland	Kennedy	Howard	EB	2037	48	32	0	2117	2069	48
	Howard	Kennedy	WB	2881	55	41	0	2977	2922	55
North Talbot	Southwood Lakes	Howard	WB	8629	126	110	19	8883	8739	144
	Howard	Southwood Lakes	EB	6038	89	222	65	6414	6260	154
Tuson	Howard	Howard	WB	0	0	0	0	0	0	0
	Howard	Howard	EB	663	11	0	0	674	663	11
Matchette	Chappus	EC Row	NB	10023	0	443	0	10466	10466	0
	EC Row	Chappus	SB	7122	0	469	0	7591	7591	0
	Carmichael	EC Row	SB	4151	0	1169	0	5320	5320	0
	EC Row	Carmichael	NB	7195	0	1406	0	8600	8600	0
GN Booth		EC Row	NB	589	16	6	0	611	595	16
	EC Row		SB	471	10	7	0	488	478	10

APPENDIX B: MOBILE 6.2 MODELLING RESULTS

MEMORANDUM

To: Ms. Abby Salb, SENES

From: Tom Darlington

Date: December 8, 2005

Subject: Emission Rates for Windsor/Detroit Crossing Project

This memo details the models, inputs, and procedures used to estimate on-road mobile source emission rates for various vehicle types for the Windsor/Detroit Crossing project.

This memo focuses on the emission rates from all vehicle types except idle emissions from heavy-duty diesel vehicles. The idle emissions from heavy-duty diesel vehicles are described in a separate AIR memo. [1]

This memo is divided into the following sections:

- Background
- Models
- Seasons and ambient temperatures
- Vehicle speeds
- Fuel inputs
- Results

Background

Detroit and Windsor are studying the possibility of adding a second Detroit River facility to augment the current Ambassador Bridge and tunnel. Such a crossing would change emissions of vehicles on both sides of the crossing. For example, heavy-duty diesel trucks may experience reduced idle times if the crossing were added. Light duty vehicles may also experience reduced idle times and somewhat higher average speeds in the vicinity of the crossings. At the same time, cross-border traffic could increase, as the time it takes to cross the border is reduced.

A key part of the study is to estimate the impact of a new crossing on traffic flow on both sides, and the resultant impact on vehicle emissions. To estimate these emission impacts requires detailed information about emission rates at idle, and at various speeds, for all the different vehicle types, and also detailed projections of traffic flow, and the projected impact of the crossing on traffic flow in the vicinity of the crossing.

The purpose of this memo is to describe the methods used to estimate emissions on both the U.S. and Canadian side of the crossing. SENES contracted with AIR to estimate vehicle emissions for all of the various vehicle types, for both sides of the crossing. AIR assisted EPA in the development of the MOBILE6 model, and also developed the MOBILE6.2C model for Environment Canada. These models estimate emissions for a number of different vehicle types. The emissions are estimated in units of g/mi for vehicles not at idle, and in units of g/hr for vehicles at idle.

Models Used

AIR used EPA's MOBILE6.2 model for the Detroit side, and used Environment Canada's M6C25PPM model for Windsor. The M6C25PPM model is a Canadian version of the MOBILE6 model that incorporates fuel changes and many other changes that are specific to the Canadian fleet. Both models estimate all of the pollutants needed in this evaluation, however, AIR utilized more up-to-date procedures for estimating emissions from idling heavy-duty diesel trucks.

The following pollutants were estimated:

- VOC
- CO
- NO_x
- SO_2
- $PM_{2.5}$
- CO_2
- Methane
- 1,3 butadiene
- Acrolein
- Formaldehyde
- Acetaldehyde
- Benzene

The above pollutants were estimated for a base year, 2004, and two projection years,

2013 and 2023.

Seasons and Ambient Temperatures

Emissions are estimated for the fours seasons. Average minimum and maximum temperatures for these seasons were determined for both locations using 30 years of data from the National Weather Service for the US, and from Environment Canada for Canada. The ambient temperatures for the two locations are shown in Table B.1 below.

Table B.1 - Average Minimum and Average Maximum Temperatures (F)				
Season	Detroit		Windsor	
Winter	22.8	35.6	19.7	32.4
Spring	38.8	57.7	37.3	55.4
Summer	67.1	88.9	60.4	79.9
Autumn	43.4	60.9	46.7	60.2

Vehicle Speeds

Vehicle speed inputs were obtained from SENES. Emissions were estimated for the following speeds: Idle (2.5 mph), 15.5, 31.1, 46.6, and 62.1 mph. The same speeds were used for both sides of the border.

Fuel Inputs

Both models used default gasoline and diesel fuel sulfur levels for Canada and the U.S. Detailed gasoline inputs are also needed to compute toxics emission rates. Ontario fuel property data was obtained from Natural Resources Canada. [2] Data for Detroit was obtained from The Alliance of Automobile Manufacturers. [3] Fuel characteristics are shown in Table B.2.

Table B.2 - Non-Sulphur Gasoline Characteristics									
City	Season	RVP (psi)	E200 (%)	E300 (%)	Arom. (%)	Olef. (%)	Benzene (%)	% with ETOH	ETOH Concen.
Detroit	Winter	14.4	53.8	82.7	26.8	6.9	1.7	25%	9.75%
	Spring	11.0	47.7	81.2	29.4	8.5	1.6	25%	9.75%
	Summer	7.6	41.6	79.6	32.0	10.0	1.5	25%	9.75%
	Fall	11.0	47.7	81.2	29.4	8.5	1.6	25%	9.75%
Windsor	Winter	14.6	53.9	84.4	25.1	9.0	0.73	100%	1.92%
	Spring	12.1	50.9	83.4	26.9	9.3	0.73	100%	1.92%
	Summer	9.7	47.9	82.4	28.8	9.7	0.73	100%	1.92%
	Fall	12.1	50.9	83.4	26.9	9.3	0.73	100%	1.92%

Gasoline and diesel sulphur levels that are contained in both models for 2003, 2013, and 2023 are shown in Table B.3.

Table B.3 - Sulphur Levels			
Fuel	Year	Sulphur Level (ppm) - Windsor	Sulphur Level (ppm) – Detroit
Gasoline	2004	52	170-180 ppm ,depending on season
	2013	25	30
	2023	25	30

Diesel	2004	320	365
	2013	15	11
	2023	15	11

Technologies and Emission Standards

Both models used in this analysis include the effects of all currently adopted regulatory programs for light duty vehicles and light duty trucks, as follows:

Light Duty Vehicles

- National LEV program starting in 2001
- Onboard vapor recovery requirements for all gasoline cars, trucks, and SUVs
- Onboard diagnostic requirements for all vehicles
- Tier 2 exhaust emission standards
- Tier 2 evaporative emission standards

Technologies which are being used to meet the Tier 2 exhaust emission standards are closer air/fuel ratio control, increased previous metal loadings on catalysts, closer-coupled catalysts, reduced cold-start emissions, and dual oxygen sensors. Technologies being used to meet the Tier 2 evaporative standards are larger and redesigned charcoal canisters, very low permeation hoses and fuel tanks, and other technologies designed to reduced vapor generation from the fuel tanks and lines during engine operation.

Heavy-Duty Vehicles

- 2004 HC+NO_x standards
- 2007-2010 HC, NO_x and PM standards
- 2010 NO_x standards

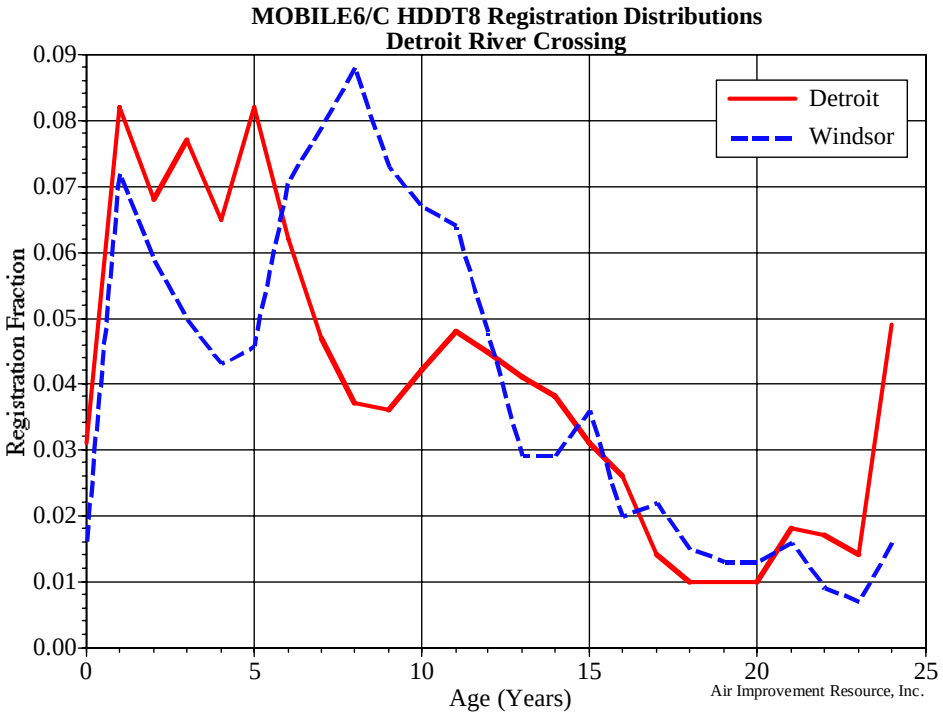
The 2007-2010 heavy-duty standards assume the use of catalyzed PM traps to meet the 0.01 g/bhp-hr PM standard, and either engine controls like aggressive EGR, or after treatment (or both) needed to obtain a 50% NO_x reduction. The 2010 heavy-duty NO_x standards are a 90% reduction from 2006 NO_x, and currently it is thought that this can only be met with after treatment and aggressive EGR. Currently the after treatment choices to meet the 2010 NO_x standard of 0.2 g/bhp-hr is either selective catalytic reduction (SCR), or a NO_x adsorber.

EPA is planning to propose a mobile source toxics rule to apply to future light duty gasoline vehicles and trucks. That rule will probably reduce toxics from motor vehicles

further, but the rule is not reflected in these emission rates because it has not been either proposed or adopted.

Heavy-Duty Fleet Turnover Comparison

The figure below shows a comparison of registration fractions versus age for both Detroit and Windsor. The Detroit fleet appears to be somewhat newer with the highest registration fractions in the 1-5 year old age group, but there also is a significantly higher fraction in the 25+ year old category for Detroit. Windsor appears to have a somewhat older fleet on average, in that the highest registrations fractions are for vehicles that are 6-9 years of age.



Results

All results are shown in spreadsheet format in two different files, “Detroit.xls”, and “Windsor.xls”.

REFERENCES

"Idle Emission Rates for Diesel Trucks", Memo from Tom Darlington at AIR to Dan Hrebenyk at SENES, November 9, 2005.

Natural Resources Canada

Alliance of Automobile Manufacturers Fuel Survey for Detroit for 2003.

M E M O R A N D U M

Dan Hrebenyk, SENES

Tom Darlington

November 9, 2005

Idle Emission Rates for Diesel Trucks

Hyper Anemo℠

This memo develops heavy duty diesel emission idle and "creep" emission rates for use in Vancouver.

Method

We are unsure of the duty cycle of heavy-duty trucks which are waiting in line at them loading terminal. Therefore, we have developed two sets of emissions rates – one is an idle emission rate, if the duty cycle is almost all idle, and the second estimate is based on a "creep" cycle, which was developed by the California Air Resources Board and West Virginia University.

The idle emission rates we recommend using in Vancouver come from a recent ARB staff report on requirements to reduce idling emissions from new and in-use trucks. The report lists idle emissions by model year for heavy-duty diesel trucks that are weighted by the fraction of time spent at low idle and high idle. The emission rates are also weighted by summer and winter fractions.

We obtained the separate winter and summer idle emission rates, at both low and high idle. For Vancouver, we have developed separate summer and winter emission rates, but we have used the ARB low and high idle fractions in each season. Idle emission rates were developed for three years: 2003, 2011, and 2020. Idle emission rates were developed for NO_x, PM_{10}, VOC, CO, and CO_2.

The emission rates based on the creep cycle have been developed from raw data obtained from the Coordinating Research Council's E55/57 testing program (the idle emission rates also ultimately come from this testing program). The creep cycle is a very low average speed cycle, where speed is varied between 0 and 8 mph and 0 and 3 mph, with an idle period in between.

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ARB's Idle Emission Rates

In the recent idle emissions staff report, ARB lists the idle emissions for heavy-duty diesel trucks in g/hr. [1] These emission rates are shown in Table B.1.

Table B.1 - HDDT Idle Emissions (grams/hour)

Calendar Year	Model Year	NO_x	ROG	PM	CO_2
2010	Pre-1991	39.8	20.2	5.3	6228
	1991-2006	115.3	9.4	1.9	6228
	2007+	115.3	8.3	0.16	6228
2020	Pre-1991	39.8	20.1	5.2	6228
	1991-2006	115.3	8.9	1.8	6228
	2007+	115.3	8.3	0.16	6228

The above emission factors were developed by the ARB from recent tests conducted by West Virginia University as a part of the Coordinating Research Councils' E55/E57 testing program. [2] The above numbers include typical accessory loads for both summer and winter (summer is weighted 7/12 and winter is weighted 5/12), and also include both low and high idle operation. The low/high idle weighting factors are 61% low idle, 39% high idle.

The PM emission rates are much lower for 2007 and later trucks, due to fact that 2007 and later trucks are subject to much lower PM standards (0.01 g/bhp-hr). While the NO_x standards are also lower in 2007 and 2010 (1.2 g/bhp-hr and 0.2 g/bhp-hr, respectively), ARB does not expect this technology to reduce idle NO_x emissions, because idle temperatures are much lower than when the engine is under load, and the expected NO_x emission control technology is expected to be less efficient at lower temperatures than at high temperatures. [1]

Idle Emissions for Vancouver

Since the climate is much different in Vancouver than in California, we recommend the use of separate winter and summer emission rates in Vancouver. The emission rates still need to utilize the ARB fractions of high and low idle operation.

We obtained the separate summer and winter high and low idle emission rates and high idle correction factors from the ARB, and these are shown in Attachments 1 and 2. We then weighted the low idle baseline with the summer high idle and winter high idle emission rates. The results are shown in Tables B.2 and B.3.

Table B.2 - Summer Vancouver Idle Emission Rates (g/hr) for HDDTs					
Model Year	PM	NO_x	CO	HC	CO_2
2007+	0.13	119.0	33.7	7.8	6594
2004-2006	1.35	119.0	33.7	7.8	6594
1998-2003	1.35	119.0	33.7	7.8	6594
1994-1997	1.80	119.0	37.4	9.7	6594
1991-1993	2.38	119.0	41.6	12.0	6594
1990	3.17	119.0	46.2	14.9	6594
1987-1989	3.17	41.1	46.2	14.9	6594
1984-1986	4.21	41.1	51.2	18.5	6594
1980-1983	5.60	41.1	56.9	22.9	6594
1977-1979	7.42	41.1	63.2	28.4	6594
1975-1976	9.08	41.1	68.1	33.0	6594
Pre-1975	10.68	41.1	72.3	37.4	6594

Table B.3 - Winter Vancouver Idle Emission Rates (g/hr) for HDDTs					
Model Year	PM	NO_x	CO	HC	CO_2
2007+	0.19	110.2	63.9	9.0	5714
2004-2006	1.95	110.2	63.9	9.0	5714
1998-2003	1.95	110.2	63.9	9.0	5714
1994-1997	2.59	110.2	70.9	11.1	5714
1991-1993	3.44	110.2	78.8	13.8	5714
1990	4.58	110.2	87.5	17.1	5714
1987-1989	4.58	38.0	87.5	17.1	5714
1984-1986	6.07	38.0	97.2	21.2	5714
1980-1983	8.08	38.0	107.9	26.3	5714
1977-1979	10.72	38.0	119.8	32.5	5714
1975-1976	13.11	38.0	129.1	37.9	5714
Pre-1975	15.42	38.0	137.1	42.8	5714

As shown in Table B.2 and B.3, the winter PM, CO, and HC emission rates are higher than the summer emission rates, and the NO_x and CO_2 emission rates are lower.

Heavy-duty truck registration distributions were obtained for British Columbia from modeling we have done for Environment Canada. The registration distributions are shown in Attachment 3. These registration distributions were used with the idle emission rates in Table B.2 and B.3 to develop fleet idle emission rates for three years: 2003, 2011, and 2020. The final fleet idle emission rates for summer and winter for 2003, 2011 and 2020 are shown in Table B.4.

Table B.4 - HDDT Fleet Idle Emission Rates (g/hr) for HDDTs

Year	Season	PM	NO_x	CO	HC	CO_2
2003	Summer	2.26	110	39.4	11.3	6594
	Winter	3.26	102	74.7	12.9	5714
2011	Summer	1.26	111	36.1	9.2	6594
	Winter	1.82	110	68.5	10.5	5714
2020	Summer	0.52	119	34.0	8.0	6594
	Winter	0.75	110	64.5	9.2	5714

"Creep" Emission Rates

The CRC testing referenced earlier also included a "Creep" cycle. This cycle was 0.13 miles long, with an average speed of 1.6 mph. The driving cycle is shown in Attachment 4. The cycle is intended to develop emissions for situations in which trucks wait in lines for long periods of time with idle and very slow speed operation, like at borders and toll collections, etc. Trucks were tested with normal accessory loads (compressor fan and alternator, but not a/c or heater).

AIR estimated average creep emissions in g/mi for pre-1991 and 1991 and later trucks, as shown in Table B.5. These were estimated in both g/mi (first two columns), and in g/hr (second two columns).

Table B.5 - "Creep" Emission Rates

	g/mi		g/hr	
Pollutant	Pre-1991	1991+	Pre-1991	1991+
NO_x	38.6	71.7	62.7	116.1
HC	15.5	9.2	25.1	14.9
PM	7.2	3.5	11.7	5.7
CO	30.9	20.2	50.0	32.7

For NO_x, the g/hr emission rates in Table 5 are similar to the NO_x and CO emission rates in Table B.4. However the creep cycle HC and PM rates appear to be higher than the rates in Table B.4. This is due to the acceleration periods from idle in this cycle (see

Attachment 4). Starting in model year 2007, however, PM emission rates must be reduced by 90%. Therefore, we propose the use of a 0.57 g/hr emission rate for 2007 and later heavy-duty trucks. While NO_x emissions may also be reduced because of lower NO_x standards, for this analysis we will assume they remain the same as 1991+ creep emission rates. We also propose the use of a 12% reduction in VOC emissions, similar to the ARB in Table B.1 (13.1 g/hr).

Using estimates of HDDV VMT fractions in Attachment 3, the 2003, 2011 and 2020 fleet "creep" emissions are shown in Table B.6.

Table B.6 - HDDT Fleet Idle Emission Rates (g/hr) for HDDTs				
Year	PM	NO_x	CO	HC
2003	6.94	105	36	17
2011	5.04	116	36	16
2020	2.19	116	33	14

The HC and PM emission rates in Table B.6 are somewhat higher than those in Table B.5. These may be the most realistic emission rates to use for Vancouver, if the duty cycle includes idle punctuated by slow movement.

SO_2 Emission Rates

SO_2 emission rates can be estimated from the very low speed fuel consumption estimates from the creep cycle data (fuel consumption is not available from the idle emission tests). Idle SO_2 emission rates in g/hr can be estimated with the following expression:

SO_2 (g/hr) = (cycle miles/mpg) *4.44 L/gal *850 g/L * Sulphur ppm * (64/32)/(hr * 10^6)

Where:

Cycle miles = 0.13 miles

Mpg = average of 2.32 mpg

850 = typical density of diesel fuel

sulphur ppm = 365 ppm in 2003, 15 ppm in other years

64/32 = molecular weight ratio of SO_2 to S

hr = cycle time in hours, or 0.08 hrs

Using the above expression, the SO_2 emission rates in g/hr are shown in

Table B.7 below.

Table B.7 - SO_2 Emission Rates (g/hr)		
Year	Sulphur in Diesel fuel (ppm)	SO_2 Emission Rate (g/hr)
2003	365	1.93
2011	15	0.08
2020	15	0.08

EPA Guidance on PM and NO_x

Finally, we note EPA's 2002 guidance recommends a NO_x emission rate of 135 g/hr, and a PM emission rates that vary by model year from 3.68 g/hr for 2006 and earlier vehicles down to 0.33 g/hr for 2029 vehicles. [3] EPA does not provide CO, HC, or SO_2 emission rates. EPA developed these emission rates from a variety of sources including the CRC data, but the guidance does not explain how EPA arrived at these emission rates.

Uncertainties

The major uncertainty with the above emission rates is ARB's assumption that the NO_x idle emission rates will not be lower in with lower NO_x standards in the 2007 and later model years. The ARB is proposing to adopt controls that would either (1) require new engines to shut-off after a period of time, or (2) emit at below 30 g/hr. If these controls are adopted by the ARB, they could also be adopted by the EPA. If they are adopted by the EPA, it is likely that Environment Canada will implement a memorandum of understanding to require the controls in Canada as well. But even if none of this happens, it is likely that the 2007-2010 NO_x emission reduction strategies will have some effect at reducing idle emissions from 2007 and later trucks. Thus, the idle NO_x emission rates for 2020 in Table B.4 are probably quite high.

Another uncertainty is whether the idle emission rates properly represent the duty cycle at the terminal. The creep emission rates indicate that the NO_x emissions are probably appropriate, but if the duty cycle is more like the creep cycle than the idle cycle, then PM and HC emission rate will be somewhat higher.

REFERENCES

"Staff Report: Initial Statement of reasons, Notice of Public Hearing to Consider Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008", September 1, 2005, California EPA, Air Resources Board.

"Heavy-Duty Vehicle Chassis Dynamometer Testing for Emission Inventory", CRC Project No. E-55/59, http:crcao.com

"Guidance for Quantifying and Using Long Duration Truck Idling Emission Reductions in State Implementation Plans and Transportation Conformity", EPA420-B-04-001, January 2004.

Attachment 1
Low Idle and High Idle Emission Rates

LOW IDLE	PM	NOx	CO	HC	CO2
BASELINE					
2007+	0.09	83.73	18.40	6.12	4366
2004-2006	0.85	83.73	18.40	6.12	4366
1998-2003	0.85	83.73	18.40	6.12	4366
1994-1997	1.13	83.73	20.44	7.59	4366
1991-1993	1.50	83.73	22.70	9.39	4366
1990	2.00	83.73	25.21	11.65	4366
1987-1989	2.00	28.91	25.21	11.65	4366
1984-1986	2.65	28.91	28.00	14.42	4366
1980-1983	3.53	28.91	31.10	17.89	4366
1977-1979	4.68	28.91	34.53	22.14	4366
1975-1976	5.72	28.91	37.21	25.79	4366
Pre-1975	6.73	28.91	39.51	29.15	4366

High Idle Summer	PM	NOx	CO	HC	CO2
2007+	0.213	174	57.6	10.5	10081
2004-2006	2.131	174	57.6	10.5	10081
1998-2003	2.131	174	57.6	10.5	10081
1994-1997	2.837	174	64.0	13.1	10081
1991-1993	3.761	174	71.0	16.2	10081
1990	5.007	174	78.9	20.1	10081
1987-1989	5.007	60	78.9	20.1	10081
1984-1986	6.639	60	87.6	24.8	10081
1980-1983	8.838	60	97.3	30.8	10081
1977-1979	11.719	60	108.1	38.1	10081
1975-1976	14.336	60	116.5	44.4	10081
Pre-1975	16.863	60	123.6	50.2	10081

High Idle Winter	PM	NOx	CO	HC	CO2
2007+	0.367	151.5	135.0	13.5	7823
2004-2006	3.666	151.5	135.0	13.5	7823
1998-2003	3.666	151.5	135.0	13.5	7823
1994-1997	4.880	151.5	149.9	16.7	7823
1991-1993	6.471	151.5	166.5	20.7	7823
1990	8.613	151.5	184.9	25.6	7823
1987-1989	8.613	52.3	184.9	25.6	7823
1984-1986	11.421	52.3	205.3	31.7	7823
1980-1983	15.203	52.3	228.1	39.4	7823
1977-1979	20.159	52.3	253.2	48.7	7823
1975-1976	24.661	52.3	272.9	56.7	7823
Pre-1975	29.008	52.3	289.7	64.1	7823

Attachment 2
Idle Correction Factors

High Idle Correction Factors

		PM	NOx	CO	HC	CO2
Summer CF	CF1	2.51	2.08	3.13	1.72	2.31
Winter CF	CF2	4.31	1.81	7.33	2.20	1.79

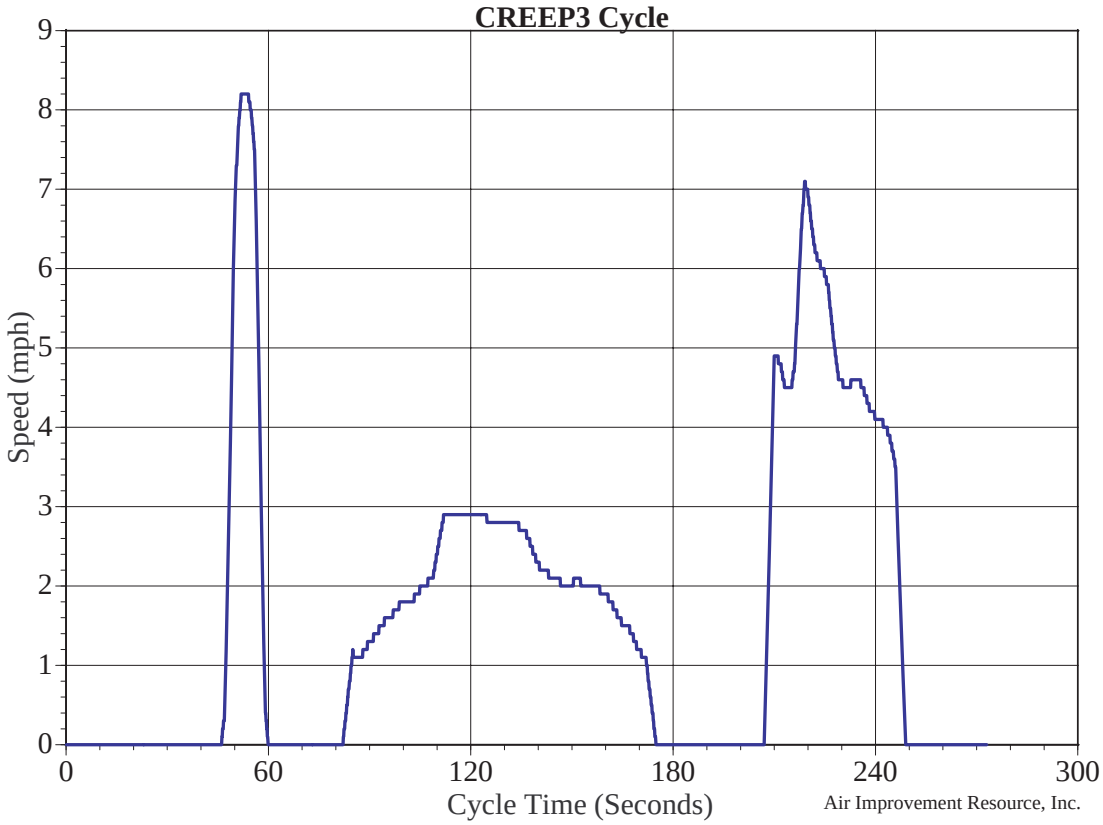
Attachment 3

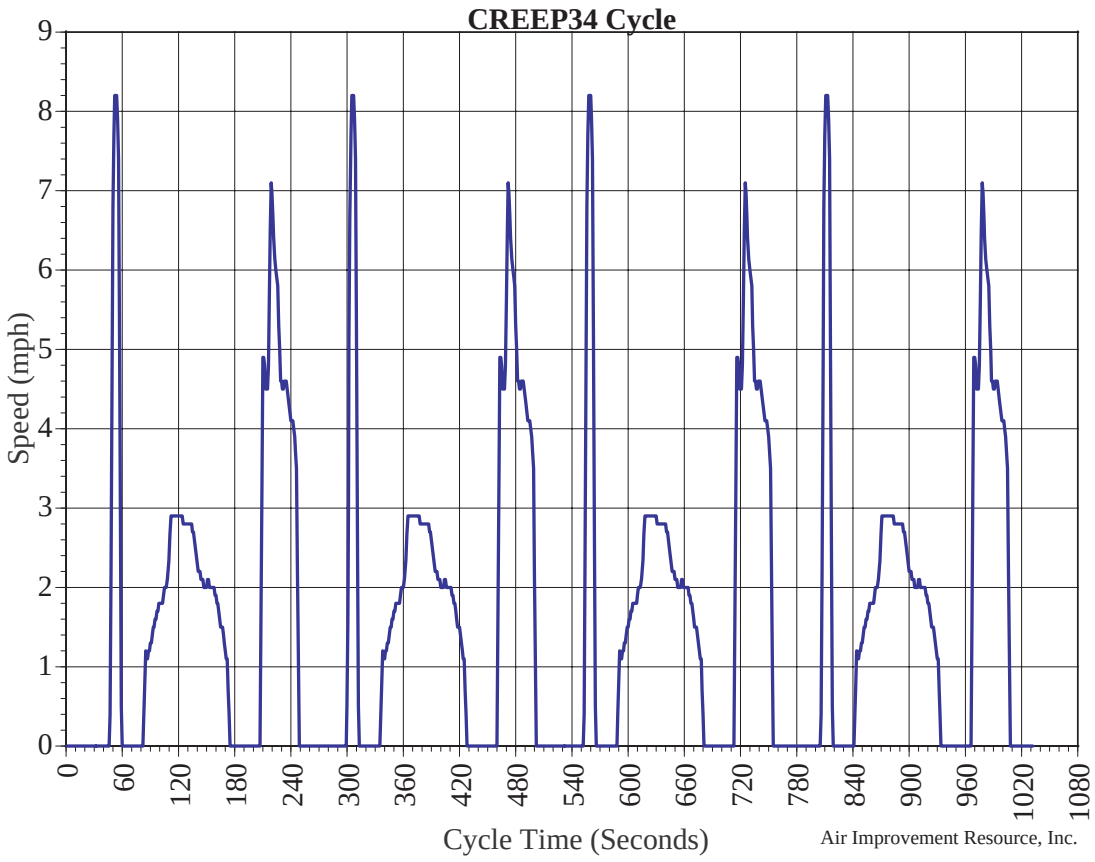
British Columbia HDDT Registration Distributions

Age	Calendar Year 2000 (used for 2003)	Calendar Year 2010 (used for 2011)	Calendar Year 2020 (used for 2020)
1	0.079	0.0816	0.0835
2	0.086	0.0733	0.075
3	0.086	0.0685	0.0701
4	0.065	0.0641	0.0655
5	0.055	0.0599	0.0612
6	0.074	0.052	0.0515
7	0.066	0.0486	0.0482
8	0.044	0.0455	0.045
9	0.040	0.0426	0.0422
10	0.039	0.0397	0.0394
11	0.062	0.0372	0.0368
12	0.050	0.0348	0.0344
13	0.047	0.0325	0.0322
14	0.034	0.0305	0.0301
15	0.029	0.0284	0.0281
16	0.022	0.0267	0.0263
17	0.013	0.0249	0.0245
18	0.004	0.0233	0.023
19	0.008	0.0218	0.0215
20	0.018	0.0204	0.0201
21	0.017	0.0191	0.0188
22	0.013	0.0179	0.0176
23	0.007	0.0166	0.0164
24	0.009	0.0156	0.0154
25	0.034	0.0745	0.0734

* Only the 1997-2020 year data were used in this analysis for 2003, 2011, and 2020.

Attachment 4
CREEP Cycle Used in CRC E55/E57
(the second cycle is the same as the first, but has 4 repeats)




CREEP34 Cycle
Speed (mph)
0
1
2
3
4
5
6
7
8
9
0
60
120
180
240
300
360
420
480
540
600
660
720
780
840
900
960
1020
1080
Cycle Time (Seconds)
Air Improvement Resource, Inc.

APPENDIX C: SAMPLE CALCULATIONS

SAMPLE CALCULATIONS

$PM_{2.5}$ EMISSIONS

Emissions of particulate (TSP, PM_{10}, and $PM_{2.5}$) from vehicle travel on roadways is a result of both tailpipe emissions and recirculation of road dust.

1. Tailpipe Emissions

Tailpipe emissions from vehicle travel were calculated by applying a fleet averaged emission factor from the Mobile 6C Emissions model for each horizon year. For the public roads, traffic data on AADT levels was supplied by IBI Group. Emission factors are dependent upon vehicle type, country of origin (of vehicle), vehicle speed and analysis year. The $PM_{2.5}$ and NO_x emission factors have been highlighted, as they are the two contaminants that have been assessed at this point in time. All contaminants will be included in the final analysis.

As both cars and trucks travel on the same roadways, an average fleet tailpipe emission factor must be calculated.

(a) $VKT_{Total} = VKT_{CDN\_car} + VKT_{CDN\_truck} + VKT_{US\_car} + VKT_{US\_Truck}$

(b) Fleet Average $EF_{(g/VKT)}$ =

$$EF_{CDN\_car} * \frac{VKT_{CDN\_car}}{VKT_{Total}} + EF_{CDN\_truck} \frac{VKT_{CDN\_truck}}{VKT_{car}} + EF_{US\_car} \frac{VKT_{US\_car}}{VKT_{Total}} + EF_{US\_truck} \frac{VKT_{US\_truck}}{VKT_{Total}}$$

Table 1a - 2015 Canadian Car Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	0.0161	0.0161	0.0086	1.32	0.0108	29.3	1398.5	2.70	0.0532	0.0084	0.0196	0.0058	0.0014
25	0.0040	0.0040	0.0021	0.44	0.0047	6.4	347.6	0.38	0.0108	0.0020	0.0047	0.0012	0.0003
50	0.0040	0.0040	0.0021	0.40	0.0047	5.9	347.6	0.28	0.0087	0.0014	0.0033	0.0010	0.0002
75	0.0040	0.0040	0.0021	0.49	0.0047	6.6	347.6	0.27	0.0085	0.0013	0.0031	0.0009	0.0002
100	0.0040	0.0040	0.0021	0.49	0.0047	6.6	347.6	0.27	0.0085	0.0013	0.0031	0.0009	0.0002

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 1b - 2015 CanadianTruck Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	1.1015	1.1015	1.07	113.68	0.08	52.50	6228	1.02	0.0113	0.0309	0.0838	0.0065	0.0050
25	0.0191	0.0191	0.01	2.35	0.007	0.96	960	0.33	0.0036	0.0099	0.0268	0.0021	0.0016
50	0.0191	0.0191	0.01	2.02	0.007	0.49	960	0.19	0.0020	0.0056	0.0152	0.0012	0.0009
75	0.0191	0.0191	0.01	2.91	0.007	0.51	960	0.16	0.0018	0.0048	0.0131	0.0010	0.0008
100	0.0191	0.0191	0.01	2.91	0.007	0.51	960	0.16	0.0018	0.0048	0.0131	0.0010	0.0008

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 1c - 2015 American Car Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	0.0158	0.0158	0.0086	1.20	0.0123	25.0	1405	2.34	0.0577	0.0080	0.0174	0.0050	0.0012
25	0.0039	0.0039	0.0021	0.40	0.0055	5.5	349	0.33	0.0118	0.0019	0.0043	0.0011	0.0003
50	0.0039	0.0039	0.0021	0.36	0.0056	5.1	349	0.25	0.0096	0.0013	0.0029	0.0008	0.0002
75	0.0039	0.0039	0.0021	0.44	0.0056	5.7	349	0.24	0.0094	0.0013	0.0028	0.0008	0.0002
100	0.0039	0.0039	0.0021	0.44	0.0056	5.7	349	0.24	0.0094	0.0013	0.0028	0.0008	0.0002

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 1d - 2015 American Truck Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	1.1901	1.1901	1.1543	111.9	0.0800	53.60	6228	1.00	0.0111	0.0303	0.0822	0.0064	0.0049
25	0.0181	0.0181	0.0119	1.9	0.0066	0.83	960	0.32	0.0035	0.0097	0.0263	0.0021	0.0016
50	0.0181	0.0181	0.0119	1.7	0.0066	0.43	960	0.18	0.0020	0.0055	0.0149	0.0012	0.0009
75	0.0181	0.0181	0.0119	2.4	0.0066	0.44	960	0.16	0.0017	0.0047	0.0128	0.0010	0.0008
100	0.0181	0.0181	0.0119	2.4	0.0066	0.44	960	0.16	0.0017	0.0047	0.0128	0.0010	0.0008

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 2a - 2025 Canadian Car Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	0.0141	0.0141	0.0066	0.63	0.0108	26.56	1411	2.26	0.0433	0.0069	0.0159	0.0048	0.0011
25	0.0035	0.0035	0.0016	0.20	0.0048	5.77	351	0.31	0.0087	0.0016	0.0038	0.0010	0.0003
50	0.0035	0.0035	0.0016	0.18	0.0048	5.34	351	0.23	0.0071	0.0012	0.0027	0.0008	0.0002
75	0.0035	0.0035	0.0016	0.21	0.0048	6.00	351	0.21	0.0070	0.0011	0.0025	0.0008	0.0002
100	0.0035	0.0035	0.0016	0.21	0.0048	6.00	351	0.21	0.0070	0.0011	0.0025	0.0008	0.0002

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 2b - 2025 Canadian Truck Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	0.0476	0.0476	0.3140	115.42	0.0800	51.30	6228	0.8575	0.0094	0.0259	0.0702	0.0055	0.0042
25	0.0118	0.0118	0.0062	0.46	0.0071	0.31	960	0.2740	0.0030	0.0083	0.0225	0.0018	0.0013
50	0.0118	0.0118	0.0062	0.39	0.0071	0.16	960	0.1553	0.0017	0.0047	0.0128	0.0010	0.0008
75	0.0118	0.0118	0.0062	0.57	0.0071	0.16	960	0.1336	0.0015	0.0040	0.0110	0.0009	0.0007
100	0.0118	0.0118	0.0062	0.57	0.0071	0.16	960	0.1336	0.0015	0.0040	0.0110	0.0009	0.0007

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 2c - 2025 American Car Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	0.0141	0.0141	0.0067	0.59	0.0123	22.0	1417	1.88	0.0454	0.0064	0.0141	0.0040	0.0010
25	0.0035	0.0035	0.0016	0.19	0.0056	4.8	352	0.26	0.0092	0.0015	0.0035	0.0009	0.0002
50	0.0035	0.0035	0.0016	0.17	0.0057	4.5	352	0.19	0.0076	0.0011	0.0024	0.0007	0.0002
75	0.0035	0.0035	0.0016	0.20	0.0057	5.0	352	0.18	0.0075	0.0010	0.0022	0.0007	0.0002
100	0.0035	0.0035	0.0016	0.20	0.0057	5.0	352	0.18	0.0075	0.0010	0.0022	0.0007	0.0002

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

Table 2d - 2025 American Truck Tailpipe Emissions (g/VKT)

Speed (km/h)	PM	PM_{10}	$PM_{2.5}$	NOx	SOx	CO	CO_2	VOC	Bn	Ac	Fm	Bu	Acr
Idle	0.0483	0.0483	0.4342	115.65	0.0800	51.50	6228	0.86	0.0095	0.0261	0.0708	0.0055	0.0042
25	0.0120	0.0120	0.0063	0.50	0.0066	0.32	960	0.28	0.0030	0.0083	0.0226	0.0018	0.0014
50	0.0120	0.0120	0.0063	0.43	0.0066	0.16	960	0.16	0.0017	0.0047	0.0128	0.0010	0.0008
75	0.0120	0.0120	0.0063	0.63	0.0066	0.17	960	0.13	0.0015	0.0041	0.0111	0.0009	0.0007
100	0.0120	0.0120	0.0063	0.63	0.0066	0.17	960	0.13	0.0015	0.0041	0.0111	0.0009	0.0007

Bn = Benzene, Ac =Acetaldehyde, Fm = Formaldehyde, Bu = 1,3 Butadiene, Acr = Acrolein

2. Road Dust Emissions

Emissions of road dust (TSP, PM_{10}, and $PM_{2.5}$) resulting from vehicular travel on paved roads were estimated using the empirical expression (*Equation 1*) and parameters (*Tables 13.2.1-1 and 13.2.1-2*) provided in *Section 13.2.1: Paved Roads* of the U.S. EPA AP-42 document.

$$EF_{(g/VKT)} = k * \left(\frac{sL}{2}\right)^{0.65} * \left(\frac{W}{3}\right)^{1.5} - C$$

where,

EF = particle emission factor (having units matching the units of k)
k = particle size multiplier (see Table 1)
sL = road surface silt content (g/m^2) (see Table 5)
W = average weight (tons) of the vehicles traveling the road
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (see Table 1)
VKT = vehicle kilometres travelled

Table 4 – Paved Road Parameters

Constant	TSP	PM_{10}	$PM_{2.5}$
k (g/VKT)	24	4.6	0.66
C (g/VKT)	0.1317	0.1317	0.1005

Table 5 – Silt Loading Default Values

Constant	Average Travel (No. of Vehicles)		
	<500	5,000-10,000	>10000
sL	0.6	0.06	0.03

Silt Loading

Silt loading factors for high numbers of vehicles can result in a decrease in contribution from road dust on a road way to negligible quantities.

Estimating W

(a) To calculate W, the car and truck contributions to the total VKT must first be determined.

$$VKT_{Total} = VKT_{car} + VKT_{truck}$$

(b) the weight of each type of vehicle must be determined
Average weight of car=3.5 tons
Average weight of truck =20 tons

(c) the average weight (tons) of the vehicles traveling the road can be determined:

$$W = W_{car} * \frac{VKT_{car}}{VKT_{Total}} + W_{truck} \frac{VKT_{truck}}{VKT_{car}}$$

3. Total $PM_{2.5}$ Emissions

$$Total\_PM_{2.5}ER_{(g/s)} = \left[TailpipeEF_{(g/VKT)} + RoadDustEF_{(g/VKT)}\right] x VKT_{Total(kg/hr)} x \frac{1hr}{3600s}$$

NO_x EMISSIONS

Emissions of NO_x from vehicle travel on roadways results solely from tailpipe emissions. The NO_x tailpipe emissions were estimated in the same manner as the $PM_{2.5}$ tailpipe emissions, and using the emission factors included above in Tables 1a through 3c.

(a) $VKT_{Total} = VKT_{CDN\_car} + VKT_{CDN\_truck} + VKT_{US\_car} + VKT_{US\_Truck}$

(b) Fleet Average $EF_{(g/VKT)}$ =

$$EF_{CDN\_car} * \frac{VKT_{CDN\_car}}{VKT_{Total}} + EF_{CDN\_truck} \frac{VKT_{CDN\_truck}}{VKT_{car}} + EF_{US\_car} \frac{VKT_{US\_car}}{VKT_{Total}} + EF_{US\_truck} \frac{VKT_{US\_truck}}{VKT_{Total}}$$

(c) $$NOxTailpipeER_{(g/s)} = \left[TailpipeEF_{(g/VKT)}\right] x VKT_{Total(kg/hr)} x \frac{1hr}{3600s}$$

QUEUING AT THE CUSTOMS/INSPECTION PLAZAS

Key assumptions:

- Inbound vehicles at customs plaza will queue at inspection booths.
- Outbound vehicles at customs plaza will not queue.
- Queuing traffic volume is same as free-flowing traffic volume.
- There is always queuing (idling) at the booth due to the one vehicle in the booth being inspected.
- Inspection times for cars and trucks are 45 seconds and 60 seconds, respectively.

Customs Plaza Queuing Algorithm:

Groups of queue links were set up for each plaza based on an equal distribution of free flow traffic through each booth that is open during a given hour. Then each queue link was manually "turned on" or "off" by calculating the number of vehicles queued. This modeling approach represents the actual situation because not all groups of queue links actually experience queuing for a given hour.

The amount of queuing at each booth was calculated manually for each group of queue links and for each hour using the hourly free flow traffic volume and the number of booths that are open during each hour, which varies by demand.

1. For each hour, the number of booths that are open is calculated using the hourly free flow traffic volume and the inspection time for each vehicle.
2. The number of vehicles passing through each booth is then back calculated.
3. The calculated number from Step 2 is then compared with the capacity of each booth, i.e., 80 for cars and 60 for trucks. If the number is less than its capacity, then no queuing in this hour; if greater than its capacity, then queuing will occur and the difference is the number of vehicles queued at the booth during that hour.
4. Based on the results obtained from Step 3, the queue links are either "turned on" (with queuing) or "off" (no queuing).
5. If there is queuing, and the queue length per booth exceeds 4 trucks or 6 cars, an additional booth is opened, if possible.
6. If there are no more booths to open, the queue length extends far enough back to accommodate the number of vehicles waiting at the plaza. The locations depend on the physical configuration of each plaza; if the number of vehicles queued determined from Step 3 exceeds the physical length of the queue link, then the next corresponding group of queue links will be "turned on", and so on.

For example, for an hour with 1004 truck traffic, the number of booths that are needed is 1004 / 60 = 17. Then the number of trucks passing through each booth is back calculated: 1004 / 17 = 59. Since this number is less than the capacity of each booth (60 trucks per hour), there will be no queuing at each booth except for the one truck that is in the booth and being inspected.

For an hour with 443 truck traffic, the number of booths that are needed is 443 / 60 = 7. Similarly, the back-calculated number of trucks passing through each booth is 443 / 7 =

63.3. Theoretically, there will be 3.3 trucks queuing at each booth, in addition to the one truck that is in the booth and being inspected. If the group of queue links right next to the booths are set up such that only 2 trucks can wait in line, then 7 of the next group of queue links will be "turned on" and on each link, there will be 1.3 trucks queuing.

Summary of CAL3QHCR Model Inputs:

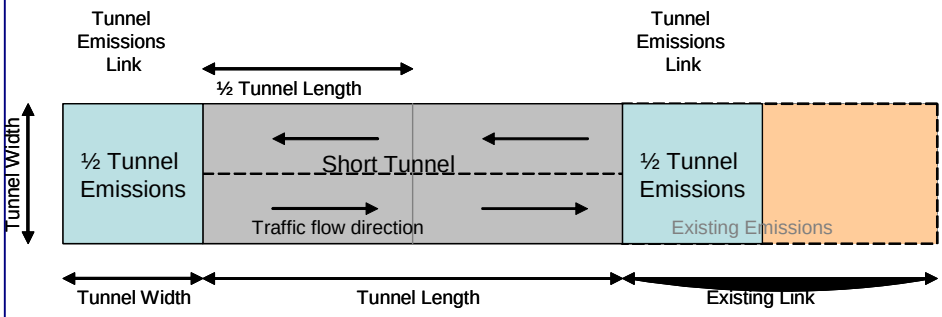
	Cars	Trucks
Number of queuing lanes	1	1
Light cycle time	45 seconds	60 seconds
Yellow time	0 seconds	0 seconds
Red duration time	40 seconds	55 seconds
Saturated flow volume (veh/hr/lane)	1200	1200
Signal type	2	2
Arrival rate	1	1
Maximum number of booths at each plaza	20	19

TUNNEL OFFSET

For The Windsor-Essex Parkway option emissions for the tunnels were considered to be emitted from the ends of the tunnels and dispersed over a short distance from the end of the tunnel. The tunnel structures are open between opposing traffic directions such that air can flow freely between the opposing traffic thus the piston effect previously described for longer tunnels is minimized. In addition, the amount of turbulence from the tunnel egress points could be expected to impact both traffic flow directions.

To simulate these egress points, the tunnel emissions from each half of the tunnel were allocated to tunnel emissions links (TEL) as in the figure below. Any emissions from the tunnel are assumed to be evenly distributed across both traffic directions. To facilitate modeling using other models, if required, the length of the tunnel emissions link was assumed to be equivalent to the width of the tunnel (this allows for volume source configurations in other models). The tunnel emissions links were overlaid with the flow of existing traffic such that within the length of the tunnel emissions link, two emission values were input into the model: the tunnel emissions and the existing roadway emissions.

Figure C.1 – Schematic for emissions calculations from Tunnels



Vehicle emissions are directly proportional to the vehicle kilometers traveled (VKT), the number of vehicles per hour and an emission factor. Therefore, traveling a distance of 100 m in a vehicle will result in twice the emissions of traveling 50 m in the same vehicle. Or, two identical cars traveling 100 m will result in twice the emissions as one car traveling 100 m. Because this is a directly proportional ratio, it is possible to adjust the emission factor, the VKT, and/or the number of vehicles to calculate equivalent emissions in the TEL.

Because the TEL length is established by the width of the tunnel and the emission factor is calculated through the use of a macro in the approach used by SENES (and is considered constant between the tunnel and the TEL), artificially adjusting the number of vehicles in the TEL was the simplest way of ensuring equivalent emissions from the tunnel. Without this adjustment, the TEL would underestimate emissions by the ratio of half of the tunnel length to the TEL length (i.e., a tunnel of 180 m with a TEL length of 30 m would result in the TEL underpredicting emissions by a factor of 6 (180 m/30 m /2).

One other consideration with this methodology is that each traffic direction may have a different flow within the same tunnel. For example, north bound traffic may have 500 vehicles per hour and south bound traffic may have 1500 vehicles per hour. When the TEL links are established within the SENES input files the traffic data is automatically entered to be consistent with the link section. To calculate an average emission from the tunnel, an average of the two directions must be considered.

The methodology used to adjust the vehicles in the TEL is as follows:

1. Calculate the ratio of half of the tunnel lengths to the TEL lengths.
2. Adjust each of the traffic directions traffic data by this ratio.
3. Calculate an average adjusted traffic volume for the link.
4. Calculate the ratio of average adjusted traffic volume to the existing volume for each direction.
5. Apply this ratio to the existing traffic volume for each direction.
6. Use these traffic direction specific ratios to determine hourly traffic data.

The following sample calculations illustrate the concept.

Given:

Howard Tunnel Length: 114 m

Howard Tunnel Width (equivalent to TEL length): 40 m

Northbound total annual average daily traffic: 14,215 vehicles

Southbound total annual average daily traffic: 27,843 vehicles

Step 1 – Calculate ratio for TEL

$$= \frac{\text{Howard Tunnel Length} / 2}{\text{Howard Tunnel Width}} = \frac{114 / 2}{40} = 1.4$$

Step 2 – Adjust traffic by ratio in each direction

= NB traffic * 1.4 = 14,215 * 1.4 = 20,307 vehicles

= SB traffic * 1.4 = 27,843 * 1.4 = 39,775 vehicles

Step 3 – Calculate average adjusted traffic volume

= (NB adjusted traffic + SB adjusted traffic)/2 = (20,307+39,775)/2 = 30,041 vehicles

Step 4 – calculate the final adjustment ratio for each traffic direction

= average adjusted traffic volume / existing volume

= 30,041/14,215 = 2.1 for NB traffic

= 30,041/27,843 = 1.1 for SB traffic

Step 5 – Apply ratio to original traffic data to come up with equivalent traffic data

This is performed within Input Maker

Step 6 – Determine revised hourly traffic data

This is performed within Input Maker

APPENDIX D: SUMMARY OF CONTAMINANTS AT SENSITIVE RECEPTORS

TABLE D1A – 1,3 BUTADIENE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.205	0.199	-3%	0	0	0%
Mangin Cr	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.199	0.198	-1%	0	0	0%
Northway and Norfolk - closest to ROW	Norfolk	1,3 Butadiene 24 hr		0.17	2015			0	0.197	0.192	-3%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	1,3 Butadiene 24 hr		0.17	2015			0	0.197	0.194	-2%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	1,3 Butadiene 24 hr		0.17	2015			0	0.191	0.189	-1%	0	0	-1%
Lambton - closest to ROW	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.185	0.186	1%	0	0	0%
Northway and Norfolk - middle of neighbourhood	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.188	0.185	-2%	0	0	-1%
Bellewood Estates	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.182	0.182	0%	0	0	1%
Lambton - 150 m from ROW	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.18	0.18	0%	0	0	-1%
Bellewood Estates	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.179	0%	0	0	0%
Huron Estates	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.178	0.177	-1%	0	0	-1%
Reddock	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.177	0.178	1%	0	0	0%
10th and Todd	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.181	1%	0	0	0%
Hearthwood - within 50 m of ROW	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.182	0.188	3%	0	0	2%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.181	1%	0	0	1%
Kendleton Court	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.181	0.181	0%	0	0	1%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.177	0.178	1%	0	0	0%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.178	0.178	0%	0	0	-1%
Hearthwood - within 100 m of ROW	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.177	1%	0	0	0%
Villa Paradiso	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.178	1%	0	0	1%
Grosvenor to Croydon	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.183	4%	0	0	1%
Alpen Rose	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.179	2%	0	0	1%
Heritage Estates	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.174	0.175	1%	0	0	0%
Royal Oak Senior Home	Home	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.175	-1%	0	0	-1%
Royal Oak Senior Home	Home	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.176	0%	0	0	0%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.182	2%	0	0	2%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.18	0.182	1%	0	0	1%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.181	0.184	2%	0	0	1%
Association for Persons with Physical Disabilities	Special Needs	1,3 Butadiene 24 hr		0.17	2015			0	0.178	0.18	1%	0	0	1%
Armanda	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.178	2%	0	0	1%
Chelsea	Residential	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.184	3%	0	0	1%
Broadway Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.179	2%	0	0	1%
Ojibway Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.173	0.174	1%	0	0	1%
Malden Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.179	2%	0	0	1%
Victoria Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.171	0.175	2%	0	0	1%
Sandwich First Baptist	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.173	-1%	0	0	-1%
A-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.177	0.173	-2%	0	0	-2%
Museum Land Mark	Museum	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.173	-1%	0	0	-1%
Indian Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.206	0.204	-1%	0	0	-1%
Bellwood Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.181	0.182	1%	0	0	-1%
Beals Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.177	0.176	-1%	0	0	-1%
Oakwood Public School	School	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.177	-1%	0	0	-1%
Oakwood Bible Chapel	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.185	0.18	-3%	0	0	-2%
C-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.188	0.183	-3%	0	0	-2%
Our Lady Of Mount Caramel Separate School	School	1,3 Butadiene 24 hr		0.17	2015			0	0.18	0.177	-2%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.176	-2%	0	0	-1%
Veteren Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.175	0%	0	0	0%
St Charbel Maronite Catholic Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.177	1%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	1,3 Butadiene 24 hr		0.17	2015			0	0.172	0.173	1%	0	0	1%
St Stevens cemetery	Cemetery	1,3 Butadiene 24 hr		0.17	2015			0	0.172	0.177	3%	0	0	2%
St Stevens Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.172	0.182	6%	0	0	3%
Sikh Cultural Society	Centre	1,3 Butadiene 24 hr		0.17	2015			0	0.173	0.183	6%	0	0	3%
Apostolic Christ Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.173	0.18	4%	0	0	2%
Heavenly Rest Cemetery	Cemetery	1,3 Butadiene 24 hr		0.17	2015			0	0.172	0.176	2%	0	0	1%
St. Nicholas Macedonian Easter	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.173	0.18	4%	0	0	2%
D-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.174	0.179	3%	0	0	2%
J.Jenner Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.174	0.177	2%	0	0	1%
Heritage Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.174	0.176	1%	0	0	1%
St Clair Park	Parkland	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.176	1%	0	0	1%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	1,3 Butadiene 24 hr		0.17	2015			0	0.179	0.179	0%	0	0	0%
St Clair College	School	1,3 Butadiene 24 hr		0.17	2015			0	0.175	0.175	0%	0	0	1%
Bellwood Public School	School	1,3 Butadiene 24 hr		0.17	2015			0	0.18	0.181	1%	0	0	0%
Ecole Monseigneur Jean-Noel	School	1,3 Butadiene 24 hr		0.17	2015			0	0.176	0.176	0%	0	0	0%
B-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2015			0	0.177	0.176	-1%	0	0	-1%

TABLE D1B – 1,3 BUTADIENE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.201	0.197	-2%	0	0	0%
Mangin Cr	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.197	0.197	0%	0	0	1%
Northway and Norfolk - closest to ROW	Norfolk	1,3 Butadiene 24 hr		0.17	2025			0	0.195	0.191	-2%	0	0	0%
Northway and Norfolk - closest to ROW	Norfolk	1,3 Butadiene 24 hr		0.17	2025			0	0.194	0.193	-1%	0	0	0%
St. Cecile Academic Music - Grand Marais	School	1,3 Butadiene 24 hr		0.17	2025			0	0.189	0.189	0%	0	0	0%
Lambton - closest to ROW	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.183	0.186	2%	0	0	1%
Northway and Norfolk - middle of neighbourhood	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.186	0.184	-1%	0	0	0%
Bellewood Estates	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.181	0.181	0%	0	0	0%
Lambton - 150 m from ROW	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.18	1%	0	0	-1%
Bellewood Estates	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.179	1%	0	0	0%
Huron Estates	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.177	0.177	0%	0	0	0%
Reddock	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.178	1%	0	0	0%
10th and Todd	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.181	2%	0	0	0%
Hearthwood - within 50 m of ROW	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.18	0.186	3%	0	0	2%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.18	1%	0	0	1%
Kendleton Court	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.181	1%	0	0	1%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.177	1%	0	0	1%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.177	0.178	1%	0	0	0%
Hearthwood - within 100 m of ROW	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.176	1%	0	0	0%
Villa Paradiso	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.178	2%	0	0	0%
Grosvenor to Croydon	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.182	4%	0	0	2%
Alpen Rose	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.179	2%	0	0	1%
Heritage Estates	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.175	1%	0	0	0%
Royal Oak Senior Home	Home	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.175	0%	0	0	0%
Royal Oak Senior Home	Home	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.175	-1%	0	0	0%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.181	2%	0	0	1%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.182	2%	0	0	1%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.18	0.183	2%	0	0	1%
Association for Persons with Physical Disabilities	Special Needs	1,3 Butadiene 24 hr		0.17	2025			0	0.177	0.18	2%	0	0	1%
Armanda	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.178	2%	0	0	1%
Chelsea	Residential	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.184	3%	0	0	1%
Broadway Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.178	2%	0	0	1%
Ojibway Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.173	0.173	0%	0	0	0%
Malden Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.179	2%	0	0	1%
Victoria Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.171	0.175	2%	0	0	1%
Sandwich First Baptist	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.173	-1%	0	0	-1%
A-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.173	-2%	0	0	-1%
Museum Land Mark	Museum	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.173	-1%	0	0	-1%
Indian Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.202	0.203	0%	0	0	0%
Bellwood Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.181	1%	0	0	0%
Beals Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.176	0%	0	0	-1%
Oakwood Public School	School	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.177	-1%	0	0	-1%
Oakwood Bible Chapel	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.183	0.18	-2%	0	0	-1%
C-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.186	0.182	-2%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.177	-1%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.175	-2%	0	0	-1%
Veteren Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.174	0%	0	0	0%
St Charbel Maronite Catholic Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.177	2%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	1,3 Butadiene 24 hr		0.17	2025			0	0.171	0.173	1%	0	0	1%
St Stevens cemetery	Cemetery	1,3 Butadiene 24 hr		0.17	2025			0	0.172	0.177	3%	0	0	2%
St Stevens Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.172	0.181	5%	0	0	3%
Sikh Cultural Society	Centre	1,3 Butadiene 24 hr		0.17	2025			0	0.173	0.182	5%	0	0	2%
Apostolic Christ Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.173	0.18	4%	0	0	2%
Heavenly Rest Cemetery	Cemetery	1,3 Butadiene 24 hr		0.17	2025			0	0.172	0.175	2%	0	0	1%
St. Nicholas Macedonian Easter	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.172	0.179	4%	0	0	2%
D-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.178	2%	0	0	2%
J.Jenner Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.177	2%	0	0	1%
Heritage Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.176	1%	0	0	1%
St Clair Park	Parkland	1,3 Butadiene 24 hr		0.17	2025			0	0.174	0.176	1%	0	0	1%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	1,3 Butadiene 24 hr		0.17	2025			0	0.178	0.179	1%	0	0	1%
St Clair College	School	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.175	0%	0	0	1%
Bellwood Public School	School	1,3 Butadiene 24 hr		0.17	2025			0	0.179	0.18	1%	0	0	0%
Ecole Monseigneur Jean-Noel	School	1,3 Butadiene 24 hr		0.17	2025			0	0.175	0.176	1%	0	0	0%
B-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2025			0	0.176	0.176	0%	0	0	-1%

TABLE D1C – 1,3 BUTADIENE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.203	0.2	-1%	0	0	0%
Mangin Cr	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.198	0.201	2%	0	0	1%
Northway and Norfolk - closest to ROW	Norfolk	1,3 Butadiene 24 hr		0.17	2035			0	0.196	0.193	-2%	0	0	1%
Northway and Norfolk - closest to ROW	Norfolk	1,3 Butadiene 24 hr		0.17	2035			0	0.196	0.195	-1%	0	0	0%
St. Cecile Academic Music - Grand Marais	School	1,3 Butadiene 24 hr		0.17	2035			0	0.19	0.191	1%	0	0	1%
Lambton - closest to ROW	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.184	0.187	2%	0	0	1%
Northway and Norfolk - middle of neighbourhood	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.188	0.186	-1%	0	0	0%
Bellewood Estates	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.182	0.183	1%	0	0	1%
Lambton - 150 m from ROW	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.18	0.18	0%	0	0	0%
Bellewood Estates	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.18	1%	0	0	0%
Huron Estates	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.178	0.178	0%	0	0	0%
Reddock	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.177	0.179	1%	0	0	0%
10th and Todd	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.182	2%	0	0	1%
Hearthwood - within 50 m of ROW	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.181	0.187	3%	0	0	2%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.181	1%	0	0	1%
Kendleton Court	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.18	0.182	1%	0	0	1%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.178	1%	0	0	0%
Villa Borghese	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.178	0.179	1%	0	0	0%
Hearthwood - within 100 m of ROW	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.177	1%	0	0	0%
Villa Paradiso	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.178	1%	0	0	1%
Grosvenor to Croydon	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.183	4%	0	0	2%
Alpen Rose	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.179	2%	0	0	1%
Heritage Estates	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.175	1%	0	0	0%
Royal Oak Senior Home	Home	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.176	0%	0	0	0%
Royal Oak Senior Home	Home	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.176	0%	0	0	1%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.183	2%	0	0	2%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.18	0.183	2%	0	0	1%
Spring Garden	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.18	0.184	2%	0	0	1%
Association for Persons with Physical Disabilities	Special Needs	1,3 Butadiene 24 hr		0.17	2035			0	0.178	0.181	2%	0	0	1%
Armanda	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.175	0.179	2%	0	0	1%
Chelsea	Residential	1,3 Butadiene 24 hr		0.17	2035			0	0.178	0.185	4%	0	0	1%
Broadway Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.18	3%	0	0	2%
Ojibway Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.173	0.174	1%	0	0	1%
Malden Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.18	2%	0	0	1%
Victoria Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.171	0.176	3%	0	0	1%
Sandwich First Baptist	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.173	-1%	0	0	-1%
A-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.173	-2%	0	0	-1%
Museum Land Mark	Museum	1,3 Butadiene 24 hr		0.17	2035			0	0.175	0.173	-1%	0	0	-1%
Indian Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.203	0.206	1%	0	0	1%
Bellwood Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.18	0.182	1%	0	0	1%
Beals Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.177	0.177	0%	0	0	-1%
Oakwood Public School	School	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.178	-1%	0	0	-1%
Oakwood Bible Chapel	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.184	0.181	-2%	0	0	-2%
C-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.188	0.184	-2%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.178	-1%	0	0	0%
Our Lady Of Mount Caramel Catholic Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.178	0.176	-1%	0	0	-1%
Veteren Memorial Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.175	1%	0	0	0%
St Charbel Maronite Catholic Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.175	0.178	2%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	1,3 Butadiene 24 hr		0.17	2035			0	0.171	0.174	2%	0	0	1%
St Stevens cemetery	Cemetery	1,3 Butadiene 24 hr		0.17	2035			0	0.172	0.177	3%	0	0	2%
St Stevens Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.172	0.182	6%	0	0	3%
Sikh Cultural Society	Centre	1,3 Butadiene 24 hr		0.17	2035			0	0.173	0.183	6%	0	0	3%
Apostolic Christ Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.173	0.18	4%	0	0	3%
Heavenly Rest Cemetery	Cemetery	1,3 Butadiene 24 hr		0.17	2035			0	0.172	0.176	2%	0	0	1%
St. Nicholas Macedonian Easter	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.173	0.18	4%	0	0	2%
D-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.179	3%	0	0	2%
J.Jenner Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.178	2%	0	0	1%
Heritage Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.176	1%	0	0	1%
St Clair Park	Parkland	1,3 Butadiene 24 hr		0.17	2035			0	0.174	0.176	1%	0	0	1%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.179	0%	0	0	0%
St Clair College	School	1,3 Butadiene 24 hr		0.17	2035			0	0.175	0.175	0%	0	0	1%
Bellwood Public School	School	1,3 Butadiene 24 hr		0.17	2035			0	0.179	0.182	2%	0	0	0%
Ecole Monseigneur Jean-Noel	School	1,3 Butadiene 24 hr		0.17	2035			0	0.176	0.176	0%	0	0	0%
B-Unknown Church	Church	1,3 Butadiene 24 hr		0.17	2035			0	0.177	0.177	0%	0	0	-1%

TABLE D2A – ACETALDEHYDE 1 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.7	2.7	-1%	2	2	0%
Mangin Cr	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.7	2.6	-3%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.7	2.6	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.7	2.6	-2%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.6	2.5	-2%	2	2	0%
Lambton - closest to ROW	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.6	2.6	0%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.6	2.6	-1%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Lambton - 150 m from ROW	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Huron Estates	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Reddock	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
10th and Todd	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.6	2%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Kendleton Court	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Villa Paradiso	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	1%	2	2	0%
Grosvenor to Croydon	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	2%	2	2	0%
Alpen Rose	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Heritage Estates	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.6	2%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.6	1%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Armanda	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	1%	2	2	0%
Chelsea	Residential	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.6	3%	2	2	0%
Broadway Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	3%	2	2	0%
Ojibway Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
Malden Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	2%	2	2	0%
Victoria Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
Sandwich First Baptist	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
A-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.4	-1%	2	2	0%
Museum Land Mark	Museum	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Indian Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.6	2.6	0%	2	2	0%
Bellwood Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.6	2%	2	2	0%
Beals Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Oakwood Public School	School	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Oakwood Bible Chapel	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
C-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	-1%
Our Lady Of Mount Caramel Separate School	School	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	1%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	1%	2	2	0%
Veteren Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
St Charbel Maronite Catholic Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	1%	2	2	0%
1- Unknown - Park & Golf Course	Golf Course	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
St Stevens cemetery	Cemetery	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	2%	2	2	0%
St Stevens Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	3%	2	2	0%
Sikh Cultural Society	Centre	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	2%	2	2	0%
Apostolic Christ Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
Heavenly Rest Cemetery	Cemetery	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
St. Nicholas Macedonian Easter	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
D-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
J.Jenner Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	2%	2	2	0%
Heritage Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	1%	2	2	0%
St Clair Park	Parkland	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Athletic Centre	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
St Clair College	School	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.4	2.5	1%	2	2	0%
Bellwood Public School	School	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	2%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
B-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%

TABLE D2B – ACETALDEHYDE 1 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.7	2.7	-1%	2	2	0%
Mangin Cr	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.7	2.6	-3%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.7	2.6	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.7	2.6	-1%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.6	2.6	-1%	2	2	0%
Lambton - closest to ROW	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.6	2.6	0%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.6	2.6	-1%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Lambton - 150 m from ROW	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Huron Estates	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Reddock	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
10th and Todd	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.6	2%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Kendleton Court	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	-1%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Villa Paradiso	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Grosvenor to Croydon	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	3%	2	2	0%
Alpen Rose	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Heritage Estates	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.6	2%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.6	1%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Armanda	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Chelsea	Residential	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.6	4%	2	2	0%
Broadway Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	3%	2	2	1%
Ojibway Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
Malden Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	2%	2	2	0%
Victoria Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
Sandwich First Baptist	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
A-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.4	0%	2	2	0%
Museum Land Mark	Museum	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Indian Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.6	2.6	0%	2	2	0%
Bellwood Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.6	3%	2	2	0%
Beals Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	-1%	2	2	0%
Oakwood Public School	School	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Oakwood Bible Chapel	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	-1%	2	2	0%
C-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	-1%	2	2	0%
Our Lady Of Mount Caramel Separate School	School	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	2%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
Veteren Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
St Charbel Maronite Catholic Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	2%	2	2	0%
1- Unknown - Park & Golf Course	Golf Course	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
St Stevens cemetery	Cemetery	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	2%	2	2	0%
St Stevens Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	3%	2	2	0%
Sikh Cultural Society	Centre	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	2%	2	2	0%
Apostolic Christ Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
Heavenly Rest Cemetery	Cemetery	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	2%	2	2	0%
St. Nicholas Macedonian Easter	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
D-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
J.Jenner Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	2%	2	2	0%
Heritage Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	1%	2	2	0%
St Clair Park	Parkland	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
St Clair College	School	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.4	2.5	1%	2	2	0%
Bellwood Public School	School	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.6	2%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
B-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%

TABLE D2C – ACETALDEHYDE 1 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.7	2.7	0%	2	2	0%
Mangin Cr	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.7	2.6	-3%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.7	2.7	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.7	2.7	-1%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.6	2.6	0%	2	2	0%
Lambton - closest to ROW	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.6	2.6	1%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.6	2.6	-1%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	1%	2	2	0%
Lambton - 150 m from ROW	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	1%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	2%	2	2	0%
Huron Estates	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Reddock	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
10th and Todd	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.6	2.6	0%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	3%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Kendleton Court	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	-1%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	-1%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Villa Paradiso	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Grosvenor to Croydon	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	3%	2	2	0%
Alpen Rose	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Heritage Estates	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	3%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	2%	2	2	0%
Spring Garden	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Armanda	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	2%	2	2	0%
Chelsea	Residential	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	5%	2	2	0%
Broadway Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	4%	2	2	1%
Ojibway Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	1%	2	2	0%
Malden Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	2%	2	2	0%
Victoria Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
Sandwich First Baptist	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	0%	2	2	0%
A-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Museum Land Mark	Museum	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	0%	2	2	0%
Indian Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.6	2.6	0%	2	2	0%
Bellwood Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	4%	2	2	0%
Beals Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Oakwood Public School	School	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Oakwood Bible Chapel	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
C-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	-1%	2	2	0%
Our Lady Of Mount Caramel Separate School	School	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	2%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
Veteren Memorial Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	1%	2	2	0%
St Charbel Maronite Catholic Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	2%	2	2	0%
1- Unknown - Park & Golf Course	Golf Course	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
St Stevens cemetery	Cemetery	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
St Stevens Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	3%	2	2	0%
Sikh Cultural Society	Centre	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
Apostolic Christ Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	1%	2	2	0%
Heavenly Rest Cemetery	Cemetery	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
St. Nicholas Macedonian Easter	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	1%	2	2	0%
D-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
J.Jenner Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	2%	2	2	0%
Heritage Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	1%	2	2	0%
St Clair Park	Parkland	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
St Clair College	School	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.4	2.5	1%	2	2	0%
Bellwood Public School	School	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.6	3%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
B-Unknown Church	Church	Acetaldehyde 1 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%

TABLE D3A – ACETALDEHYDE 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Mangin Cr	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.5	2.5	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.5	2.4	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.5	2.4	-1%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Lambton - closest to ROW	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	-1%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Lambton - 150 m from ROW	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Huron Estates	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Reddock	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
10th and Todd	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Kendleton Court	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Villa Paradiso	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Grosvenor to Croydon	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	1%	2	2	0%
Alpen Rose	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Heritage Estates	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Armanda	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Chelsea	Residential	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Broadway Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	1%	2	2	0%
Ojibway Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Malden Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Victoria Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Sandwich First Baptist	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
A-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Museum Land Mark	Museum	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Indian Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.5	2.5	0%	2	2	0%
Bellwood Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Beals Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Oakwood Public School	School	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Oakwood Bible Chapel	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	-1%	2	2	0%
C-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	-1%	2	2	0%
Our Lady Of Mount Caramel Separate School	School	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Veteren Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St Charbel Maronite Catholic Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
1- Unknown - Park & Golf Course	Golf Course	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St Stevens cemetery	Cemetery	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St Stevens Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	1%	2	2	0%
Sikh Cultural Society	Centre	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	1%	2	2	0%
Apostolic Christ Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Heavenly Rest Cemetery	Cemetery	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St. Nicholas Macedonian Easter	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
D-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
J.Jenner Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Heritage Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St Clair Park	Parkland	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
St Clair College	School	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Bellwood Public School	School	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%
B-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2015	0	0	0	2.4	2.4	0%	2	2	0%

TABLE D3B – ACETALDEHYDE 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.5	2.5	-1%	2	2	0%
Mangin Cr	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.5	2.4	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.5	2.4	-1%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Lambton - closest to ROW	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Lambton - 150 m from ROW	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Huron Estates	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Reddock	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
10th and Todd	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Kendleton Court	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Villa Paradiso	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Grosvenor to Croydon	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	1%	2	2	0%
Alpen Rose	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Heritage Estates	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Armanda	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Chelsea	Residential	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	1%	2	2	0%
Broadway Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	1%	2	2	0%
Ojibway Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Malden Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Victoria Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Sandwich First Baptist	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
A-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Museum Land Mark	Museum	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Indian Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.5	2.5	0%	2	2	0%
Bellwood Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Beals Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Oakwood Public School	School	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Oakwood Bible Chapel	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
C-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	-1%	2	2	0%
Our Lady Of Mount Caramel Separate School	School	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Veteren Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St Charbel Maronite Catholic Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
1- Unknown - Park & Golf Course	Golf Course	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St Stevens cemetery	Cemetery	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St Stevens Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	1%	2	2	0%
Sikh Cultural Society	Centre	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	1%	2	2	0%
Apostolic Christ Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Heavenly Rest Cemetery	Cemetery	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St. Nicholas Macedonian Easter	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
D-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
J.Jenner Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Heritage Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St Clair Park	Parkland	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
St Clair College	School	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Bellwood Public School	School	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%
B-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2025	0	0	0	2.4	2.4	0%	2	2	0%

TABLE D3C – ACETALDEHYDE 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.5	2.5	-1%	2	2	0%
Mangin Cr	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.5	2.5	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.5	2.5	-1%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.5	2.4	0%	2	2	0%
Lambton - closest to ROW	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Lambton - 150 m from ROW	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Bellewood Estates	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Huron Estates	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Reddock	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
10th and Todd	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Kendleton Court	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Villa Borghese	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Villa Paradiso	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Grosvenor to Croydon	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	1%	2	2	0%
Alpen Rose	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Heritage Estates	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Royal Oak Senior Home	Home	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Spring Garden	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Armanda	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Chelsea	Residential	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	1%	2	2	0%
Broadway Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	1%	2	2	0%
Ojibway Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Malden Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Victoria Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Sandwich First Baptist	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
A-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Museum Land Mark	Museum	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Indian Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.5	2.5	0%	2	2	0%
Bellwood Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Beals Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Oakwood Public School	School	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Oakwood Bible Chapel	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
C-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	-1%	2	2	0%
Our Lady Of Mount Caramel Separate School	School	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Veteren Memorial Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St Charbel Maronite Catholic Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	1%	2	2	0%
1- Unknown - Park & Golf Course	Golf Course	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St Stevens cemetery	Cemetery	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St Stevens Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	1%	2	2	0%
Sikh Cultural Society	Centre	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	1%	2	2	0%
Apostolic Christ Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Heavenly Rest Cemetery	Cemetery	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St. Nicholas Macedonian Easter	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
D-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
J.Jenner Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Heritage Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St Clair Park	Parkland	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
St Clair College	School	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Bellwood Public School	School	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%
B-Unknown Church	Church	Acetaldehyde 24 hr	500	2.4	2035	0	0	0	2.4	2.4	0%	2	2	0%

TABLE D4A – ACROLEIN 1/2 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.25	0.24	-3%	0	0	-1%
Mangin Cr	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.24	0.23	-6%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.24	0.23	-3%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.24	0.23	-3%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.22	-2%	0	0	-1%
Lambton - closest to ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.22	-1%	0	0	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.22	-3%	0	0	-1%
Bellewood Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	-1%
Lambton - 150 m from ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	0%	0	0	-1%
Bellewood Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	0%	0	0	0%
Huron Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	1%	0	0	-1%
Reddock	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	0%	0	0	-1%
10th and Todd	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.21	-1%	0	0	-1%
Hearthwood - within 50 m of ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.23	5%	0	0	1%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	0%
Kendleton Court	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	1%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.20	-2%	0	0	0%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.20	-3%	0	0	0%
Hearthwood - within 100 m of ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	0%
Villa Paradiso	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	1%	0	0	0%
Grosvenor to Croydon	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.22	6%	0	0	1%
Alpen Rose	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	1%	0	0	0%
Heritage Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	0%	0	0	0%
Royal Oak Senior Home	Home	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	-1%
Royal Oak Senior Home	Home	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	-1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.22	5%	0	0	1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.22	3%	0	0	1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.21	-1%	0	0	0%
Association for Persons with Physical Disabilities	Special Needs	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	0%	0	0	0%
Armanda	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	2%	0	0	0%
Chelsea	Residential	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.23	7%	0	0	1%
Broadway Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	7%	0	0	1%
Ojibway Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	0%	0	0	0%
Malden Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	2%	0	0	1%
Victoria Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	2%	0	0	0%
Sandwich First Baptist	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	0%	0	0	-1%
A-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	-2%	0	0	-1%
Museum Land Mark	Museum	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	-1%	0	0	-1%
Indian Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.23	0.23	-2%	0	0	-1%
Bellwood Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.22	3%	0	0	0%
Beals Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	-1%	0	0	-1%
Oakwood Public School	School	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.20	-2%	0	0	-1%
Oakwood Bible Chapel	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-2%	0	0	-1%
C-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.22	0.21	-4%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	2%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	1%	0	0	-1%
Veteren Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	1%	0	0	0%
St Charbel Maronite Catholic Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	0%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	1%	0	0	0%
St Stevens cemetery	Cemetery	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	4%	0	0	1%
St Stevens Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	6%	0	0	1%
Sikh Cultural Society	Centre	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	4%	0	0	1%
Apostolic Christ Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	2%	0	0	1%
Heavenly Rest Cemetery	Cemetery	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	4%	0	0	1%
St. Nicholas Macedonian Easter	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	3%	0	0	1%
D-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	3%	0	0	1%
J.Jenner Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.21	4%	0	0	0%
Heritage Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	1%	0	0	0%
St Clair Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.21	-1%	0	0	-1%
St Clair College	School	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	1%	0	0	0%
Bellwood Public School	School	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.21	0.22	4%	0	0	-1%
Ecole Monseigneur Jean-Noel	School	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	-1%	0	0	0%
B-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2015	0	0	0	0.20	0.20	-2%	0	0	-1%

TABLE D4B – ACROLEIN 1/2 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.25	0.24	-3%	0	0	-1%
Mangin Cr	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.24	0.23	-6%	0	0	0%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.24	0.23	-3%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.24	0.23	-3%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.22	0.22	-1%	0	0	-1%
Lambton - closest to ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.22	0.22	0%	0	0	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.22	0.22	-2%	0	0	-1%
Bellewood Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	1%	0	0	-1%
Lambton - 150 m from ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	1%	0	0	-1%
Bellewood Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	1%	0	0	0%
Huron Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	1%	0	0	-1%
Reddock	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	0%	0	0	-1%
10th and Todd	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	0%	0	0	-1%
Hearthwood - within 50 m of ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.22	0.23	5%	0	0	0%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	0%	0	0	0%
Kendleton Court	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	-1%	0	0	1%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.20	-2%	0	0	0%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.20	-3%	0	0	0%
Hearthwood - within 100 m of ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	-1%	0	0	0%
Villa Paradiso	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	1%	0	0	0%
Grosvenor to Croydon	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.22	5%	0	0	1%
Alpen Rose	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	1%	0	0	1%
Heritage Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	1%	0	0	0%
Royal Oak Senior Home	Home	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	-1%	0	0	-1%
Royal Oak Senior Home	Home	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	-1%	0	0	-1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.22	6%	0	0	1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.22	4%	0	0	1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	0%	0	0	1%
Association for Persons with Physical Disabilities	Special Needs	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	0%	0	0	0%
Armanda	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	2%	0	0	0%
Chelsea	Residential	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.23	8%	0	0	0%
Broadway Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.22	8%	0	0	1%
Ojibway Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	1%	0	0	0%
Malden Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	2%	0	0	1%
Victoria Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	2%	0	0	0%
Sandwich First Baptist	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	0%	0	0	-1%
A-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	-2%	0	0	-1%
Museum Land Mark	Museum	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	0%	0	0	-1%
Indian Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.23	0.23	0%	0	0	0%
Bellwood Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.22	5%	0	0	0%
Beals Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	-1%	0	0	-1%
Oakwood Public School	School	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.20	-2%	0	0	-1%
Oakwood Bible Chapel	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	-1%	0	0	-1%
C-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.22	0.21	-3%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	2%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	1%	0	0	0%
Veteren Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	1%	0	0	0%
St Charbel Maronite Catholic Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	2%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	2%	0	0	0%
St Stevens cemetery	Cemetery	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	4%	0	0	1%
St Stevens Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	6%	0	0	1%
Sikh Cultural Society	Centre	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	5%	0	0	1%
Apostolic Christ Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	3%	0	0	1%
Heavenly Rest Cemetery	Cemetery	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	4%	0	0	1%
St. Nicholas Macedonian Easter	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	3%	0	0	1%
D-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	4%	0	0	1%
J.Jenner Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	5%	0	0	0%
Heritage Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.21	2%	0	0	0%
St Clair Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	-1%	0	0	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.21	0%	0	0	0%
St Clair College	School	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	1%	0	0	0%
Bellwood Public School	School	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.21	0.22	5%	0	0	0%
Ecole Monseigneur Jean-Noel	School	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	-1%	0	0	0%
B-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2025	0	0	0	0.20	0.20	-1%	0	0	-1%

TABLE D4C – ACROLEIN 1/2 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.25	0.25	-1%	0	0	-1%
Mangin Cr	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.25	0.23	-5%	0	0	0%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.24	0.24	-2%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.24	0.24	-2%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.23	0.22	-1%	0	0	0%
Lambton - closest to ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.23	0.23	2%	0	0	1%
Northway and Norfolk - middle of neighbourhood	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.22	-2%	0	0	-1%
Bellewood Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	3%	0	0	0%
Lambton - 150 m from ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	2%	0	0	0%
Bellewood Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	2%	0	0	0%
Huron Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	3%	0	0	-1%
Reddock	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	0%	0	0	-1%
10th and Todd	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.22	-1%	0	0	0%
Hearthwood - within 50 m of ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.23	6%	0	0	0%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	-1%	0	0	0%
Kendleton Court	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.22	-1%	0	0	1%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.20	-2%	0	0	0%
Villa Borghese	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	-3%	0	0	0%
Hearthwood - within 100 m of ROW	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	-1%	0	0	0%
Villa Paradiso	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	1%	0	0	0%
Grosvenor to Croydon	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	7%	0	0	1%
Alpen Rose	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	1%	0	0	0%
Heritage Estates	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	1%	0	0	0%
Royal Oak Senior Home	Home	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	-1%	0	0	0%
Royal Oak Senior Home	Home	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	1%	0	0	0%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.23	7%	0	0	1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.23	6%	0	0	1%
Spring Garden	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	2%	0	0	1%
Association for Persons with Physical Disabilities	Special Needs	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	2%	0	0	1%
Armanda	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	4%	0	0	0%
Chelsea	Residential	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.24	9%	0	0	0%
Broadway Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.22	10%	0	0	1%
Ojibway Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	2%	0	0	0%
Malden Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	5%	0	0	1%
Victoria Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	3%	0	0	0%
Sandwich First Baptist	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	0%	0	0	-1%
A-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	-2%	0	0	-1%
Museum Land Mark	Museum	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	0%	0	0	-1%
Indian Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.23	0.23	1%	0	0	0%
Bellwood Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	7%	0	0	0%
Beals Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	0%	0	0	-1%
Oakwood Public School	School	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	-1%	0	0	-1%
Oakwood Bible Chapel	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.21	-2%	0	0	-1%
C-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.22	0.21	-3%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	3%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	1%	0	0	0%
Veteren Memorial Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	1%	0	0	0%
St Charbel Maronite Catholic Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	3%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	2%	0	0	0%
St Stevens cemetery	Cemetery	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	4%	0	0	1%
St Stevens Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	7%	0	0	1%
Sikh Cultural Society	Centre	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	4%	0	0	1%
Apostolic Christ Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	3%	0	0	1%
Heavenly Rest Cemetery	Cemetery	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	5%	0	0	1%
St. Nicholas Macedonian Easter	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	3%	0	0	1%
D-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	4%	0	0	1%
J.Jenner Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	5%	0	0	0%
Heritage Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.21	2%	0	0	0%
St Clair Park	Parkland	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	-1%	0	0	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.21	0%	0	0	0%
St Clair College	School	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	1%	0	0	0%
Bellwood Public School	School	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.22	6%	0	0	0%
Ecole Monseigneur Jean-Noel	School	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.20	0.20	0%	0	0	-1%
B-Unknown Church	Church	Acrolein - 1/2 hr	0.08	0.16	2035	0	0	0	0.21	0.20	-2%	0	0	-1%

TABLE D5A – ACROLEIN 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	-2%	0	0	-1%
Mangin Cr	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	-1%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	-2%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	-2%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	-1%	0	0	-1%
Lambton - closest to ROW	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	0%	0	0	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.16	-1%	0	0	-1%
Bellewood Estates	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	0%
Lambton - 150 m from ROW	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	-1%
Bellewood Estates	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Huron Estates	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Reddock	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
10th and Todd	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	-1%
Hearthwood - within 50 m of ROW	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.17	1%	0	0	0%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Kendleton Court	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	1%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Hearthwood - within 100 m of ROW	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Villa Paradiso	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
Grosvenor to Croydon	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
Alpen Rose	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Heritage Estates	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Royal Oak Senior Home	Home	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	-1%
Royal Oak Senior Home	Home	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Association for Persons with Physical Disabilities	Special Needs	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Armanda	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
Chelsea	Residential	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
Broadway Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
Ojibway Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Malden Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
Victoria Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
Sandwich First Baptist	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	-1%
A-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Museum Land Mark	Museum	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	-1%
Indian Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.17	-1%	0	0	-1%
Bellwood Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	-1%
Beals Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	0%
Oakwood Public School	School	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Oakwood Bible Chapel	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.16	-1%	0	0	-1%
C-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.17	0.16	-2%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	-1%
Veteren Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	0%
St Charbel Maronite Catholic Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
St Stevens cemetery	Cemetery	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
St Stevens Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	2%	0	0	1%
Sikh Cultural Society	Centre	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
Apostolic Christ Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
Heavenly Rest Cemetery	Cemetery	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	1%
St. Nicholas Macedonian Easter	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
D-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	1%
J.Jenner Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
Heritage Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	1%	0	0	0%
St Clair Park	Parkland	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	0%
St Clair College	School	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Bellwood Public School	School	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	0%	0	0	0%
Ecole Monseigneur Jean-Noel	School	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	0%
B-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2015	365	365	0	0.16	0.16	-1%	0	0	0%

TABLE D5B – ACROLEIN 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	-2%	0	0	-1%
Mangin Cr	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	-1%	0	0	0%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	-2%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	-1%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	-1%	0	0	-1%
Lambton - closest to ROW	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	0%	0	0	0%
Northway and Norfolk - middle of neighbourhood	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.16	-1%	0	0	-1%
Bellewood Estates	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	0%
Lambton - 150 m from ROW	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Bellewood Estates	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	-1%
Huron Estates	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Reddock	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
10th and Todd	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Hearthwood - within 50 m of ROW	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.17	1%	0	0	1%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Kendleton Court	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	1%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	-1%
Hearthwood - within 100 m of ROW	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Villa Paradiso	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Grosvenor to Croydon	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
Alpen Rose	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Heritage Estates	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Royal Oak Senior Home	Home	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Royal Oak Senior Home	Home	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	-1%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	1%
Association for Persons with Physical Disabilities	Special Needs	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Armanda	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Chelsea	Residential	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.17	1%	0	0	0%
Broadway Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
Ojibway Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Malden Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Victoria Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Sandwich First Baptist	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	-1%
A-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	-1%
Museum Land Mark	Museum	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	-1%
Indian Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.17	-1%	0	0	-1%
Bellwood Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	-1%
Beals Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Oakwood Public School	School	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	-1%
Oakwood Bible Chapel	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.16	-1%	0	0	-1%
C-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.17	0.16	-2%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	-1%
Our Lady Of Mount Caramel Catholic Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	0%
Veteren Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	0%
St Charbel Maronite Catholic Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
St Stevens cemetery	Cemetery	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
St Stevens Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
Sikh Cultural Society	Centre	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
Apostolic Christ Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
Heavenly Rest Cemetery	Cemetery	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
St. Nicholas Macedonian Easter	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
D-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	1%
J.Jenner Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Heritage Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
St Clair Park	Parkland	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	0%
St Clair College	School	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	0%	0	0	0%
Bellwood Public School	School	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	1%	0	0	0%
Ecole Monseigneur Jean-Noel	School	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	0%
B-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2025	365	365	0	0.16	0.16	-1%	0	0	0%

TABLE D5C – ACROLEIN 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-3%	0	0	-1%
Mangin Cr	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-1%	0	0	0%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-2%	0	0	-1%
Northway and Norfolk - closest to ROW	Norfolk	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-1%	0	0	-1%
St. Cecile Academic Music - Grand Marais	School	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-1%	0	0	-1%
Lambton - closest to ROW	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	0%	0	0	1%
Northway and Norfolk - middle of neighbourhood	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-1%	0	0	0%
Bellewood Estates	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Lambton - 150 m from ROW	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Bellewood Estates	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	-1%
Huron Estates	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	-1%
Reddock	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
10th and Todd	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	-1%
Hearthwood - within 50 m of ROW	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	1%	0	0	0%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	0%
Kendleton Court	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.17	1%	0	0	1%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	0%
Villa Borghese	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	-1%
Hearthwood - within 100 m of ROW	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Villa Paradiso	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
Grosvenor to Croydon	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Alpen Rose	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Heritage Estates	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
Royal Oak Senior Home	Home	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Royal Oak Senior Home	Home	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	0%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Spring Garden	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
Association for Persons with Physical Disabilities	Special Needs	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
Armanda	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
Chelsea	Residential	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.17	1%	0	0	0%
Broadway Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Ojibway Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Malden Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Victoria Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Sandwich First Baptist	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	-1%
A-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	-1%
Museum Land Mark	Museum	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	-1%
Indian Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.17	-1%	0	0	0%
Bellwood Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Beals Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	0%
Oakwood Public School	School	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	-1%
Oakwood Bible Chapel	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.16	-1%	0	0	-1%
C-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.17	0.16	-1%	0	0	-1%
Our Lady Of Mount Caramel Separate School	School	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Our Lady Of Mount Caramel Catholic Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	-1%
Veteren Memorial Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
St Charbel Maronite Catholic Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
1- Unknown - Park & Golf Course	Golf Course	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
St Stevens cemetery	Cemetery	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
St Stevens Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	2%	0	0	1%
Sikh Cultural Society	Centre	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Apostolic Christ Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
Heavenly Rest Cemetery	Cemetery	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
St. Nicholas Macedonian Easter	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
D-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	1%
J.Jenner Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
Heritage Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	1%	0	0	0%
St Clair Park	Parkland	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
St Clair College	School	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
Bellwood Public School	School	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	-1%
Ecole Monseigneur Jean-Noel	School	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	0%	0	0	0%
B-Unknown Church	Church	Acrolein 24 hr	0.24	0.16	2035	365	365	0	0.16	0.16	-1%	0	0	0%

TABLE D6A – BENZENE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Benzene 24 hr		2.7	2015			0	2.581	2.572	0%	2	2	1%
Mangin Cr	Residential	Benzene 24 hr		2.7	2015			0	2.538	2.561	1%	2	2	1%
Northway and Norfolk - closest to ROW	Norfolk	Benzene 24 hr		2.7	2015			0	2.518	2.497	-1%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Benzene 24 hr		2.7	2015			0	2.515	2.509	0%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Benzene 24 hr		2.7	2015			0	2.475	2.479	0%	2	2	0%
Lambton - closest to ROW	Residential	Benzene 24 hr		2.7	2015			0	2.424	2.439	1%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Benzene 24 hr		2.7	2015			0	2.451	2.435	-1%	2	2	0%
Bellewood Estates	Residential	Benzene 24 hr		2.7	2015			0	2.412	2.414	0%	2	2	0%
Lambton - 150 m from ROW	Residential	Benzene 24 hr		2.7	2015			0	2.4	2.394	0%	2	2	0%
Bellewood Estates	Residential	Benzene 24 hr		2.7	2015			0	2.385	2.39	0%	2	2	0%
Huron Estates	Residential	Benzene 24 hr		2.7	2015			0	2.381	2.378	0%	2	2	0%
Reddock	Residential	Benzene 24 hr		2.7	2015			0	2.368	2.378	0%	2	2	0%
10th and Todd	Residential	Benzene 24 hr		2.7	2015			0	2.395	2.411	1%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Benzene 24 hr		2.7	2015			0	2.405	2.461	2%	2	2	1%
Villa Borghese	Residential	Benzene 24 hr		2.7	2015			0	2.384	2.406	1%	2	2	1%
Kendleton Court	Residential	Benzene 24 hr		2.7	2015			0	2.397	2.405	0%	2	2	0%
Villa Borghese	Residential	Benzene 24 hr		2.7	2015			0	2.367	2.379	1%	2	2	0%
Villa Borghese	Residential	Benzene 24 hr		2.7	2015			0	2.378	2.388	0%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Benzene 24 hr		2.7	2015			0	2.361	2.368	0%	2	2	0%
Villa Paradiso	Residential	Benzene 24 hr		2.7	2015			0	2.364	2.378	1%	2	2	0%
Grosvenor to Croydon	Residential	Benzene 24 hr		2.7	2015			0	2.368	2.414	2%	2	2	1%
Alpen Rose	Residential	Benzene 24 hr		2.7	2015			0	2.368	2.395	1%	2	2	0%
Heritage Estates	Residential	Benzene 24 hr		2.7	2015			0	2.347	2.355	0%	2	2	0%
Royal Oak Senior Home	Home	Benzene 24 hr		2.7	2015			0	2.359	2.36	0%	2	2	0%
Royal Oak Senior Home	Home	Benzene 24 hr		2.7	2015			0	2.363	2.36	0%	2	2	0%
Spring Garden	Residential	Benzene 24 hr		2.7	2015			0	2.394	2.419	1%	2	2	1%
Spring Garden	Residential	Benzene 24 hr		2.7	2015			0	2.404	2.42	1%	2	2	1%
Spring Garden	Residential	Benzene 24 hr		2.7	2015			0	2.408	2.431	1%	2	2	0%
Association for Persons with Physical Disabilities	Special Needs	Benzene 24 hr		2.7	2015			0	2.385	2.401	1%	2	2	0%
Armanda	Residential	Benzene 24 hr		2.7	2015			0	2.363	2.384	1%	2	2	0%
Chelsea	Residential	Benzene 24 hr		2.7	2015			0	2.386	2.427	2%	2	2	1%
Broadway Park	Parkland	Benzene 24 hr		2.7	2015			0	2.357	2.377	1%	2	2	1%
Ojibway Park	Parkland	Benzene 24 hr		2.7	2015			0	2.343	2.347	0%	2	2	0%
Malden Park	Parkland	Benzene 24 hr		2.7	2015			0	2.37	2.39	1%	2	2	0%
Victoria Memorial Park	Parkland	Benzene 24 hr		2.7	2015			0	2.329	2.36	1%	2	2	1%
Sandwich First Baptist	Church	Benzene 24 hr		2.7	2015			0	2.36	2.34	-1%	2	2	-1%
A-Unknown Church	Church	Benzene 24 hr		2.7	2015			0	2.376	2.341	-1%	2	2	-1%
Museum Land Mark	Museum	Benzene 24 hr		2.7	2015			0	2.361	2.34	-1%	2	2	-1%
Indian Memorial Park	Parkland	Benzene 24 hr		2.7	2015			0	2.628	2.615	0%	2	2	0%
Bellwood Park	Parkland	Benzene 24 hr		2.7	2015			0	2.403	2.417	1%	2	2	0%
Beals Park	Parkland	Benzene 24 hr		2.7	2015			0	2.37	2.364	0%	2	2	0%
Oakwood Public School	School	Benzene 24 hr		2.7	2015			0	2.39	2.375	-1%	2	2	-1%
Oakwood Bible Chapel	Church	Benzene 24 hr		2.7	2015			0	2.431	2.403	-1%	2	2	-1%
C-Unknown Church	Church	Benzene 24 hr		2.7	2015			0	2.463	2.43	-1%	2	2	-1%
Our Lady Of Mount Caramel Separate School	School	Benzene 24 hr		2.7	2015			0	2.397	2.374	-1%	2	2	-1%
Our Lady Of Mount Caramel Catholic Church	Church	Benzene 24 hr		2.7	2015			0	2.389	2.359	-1%	2	2	-1%
Veteren Memorial Park	Parkland	Benzene 24 hr		2.7	2015			0	2.353	2.353	0%	2	2	0%
St Charbel Maronite Catholic Church	Church	Benzene 24 hr		2.7	2015			0	2.361	2.373	1%	2	2	1%
1- Unknown - Park & Golf Course	Golf Course	Benzene 24 hr		2.7	2015			0	2.331	2.344	1%	2	2	0%
St Stevens cemetery	Cemetery	Benzene 24 hr		2.7	2015			0	2.332	2.38	2%	2	2	1%
St Stevens Church	Church	Benzene 24 hr		2.7	2015			0	2.332	2.421	4%	2	2	2%
Sikh Cultural Society	Centre	Benzene 24 hr		2.7	2015			0	2.346	2.435	4%	2	2	2%
Apostolic Christ Church	Church	Benzene 24 hr		2.7	2015			0	2.343	2.414	3%	2	2	1%
Heavenly Rest Cemetery	Cemetery	Benzene 24 hr		2.7	2015			0	2.336	2.366	1%	2	2	1%
St. Nicholas Macedonian Easter	Church	Benzene 24 hr		2.7	2015			0	2.343	2.409	3%	2	2	1%
D-Unknown Church	Church	Benzene 24 hr		2.7	2015			0	2.352	2.392	2%	2	2	1%
J.Jenner Park	Parkland	Benzene 24 hr		2.7	2015			0	2.354	2.381	1%	2	2	0%
Heritage Park	Parkland	Benzene 24 hr		2.7	2015			0	2.349	2.362	1%	2	2	0%
St Clair Park	Parkland	Benzene 24 hr		2.7	2015			0	2.351	2.362	0%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Benzene 24 hr		2.7	2015			0	2.384	2.387	0%	2	2	0%
St Clair College	School	Benzene 24 hr		2.7	2015			0	2.357	2.357	0%	2	2	0%
Bellwood Public School	School	Benzene 24 hr		2.7	2015			0	2.397	2.41	1%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Benzene 24 hr		2.7	2015			0	2.362	2.36	0%	2	2	0%
B-Unknown Church	Church	Benzene 24 hr		2.7	2015			0	2.372	2.365	0%	2	2	0%

TABLE D6B – BENZENE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Benzene 24 hr		2.7	2025			0	2.547	2.545	0%	2	2	1%
Mangin Cr	Residential	Benzene 24 hr		2.7	2025			0	2.51	2.543	1%	2	2	1%
Northway and Norfolk - closest to ROW	Norfolk	Benzene 24 hr		2.7	2025			0	2.494	2.485	0%	2	2	0%
Northway and Norfolk - closest to ROW	Norfolk	Benzene 24 hr		2.7	2025			0	2.492	2.497	0%	2	2	0%
St. Cecile Academic Music - Grand Marais	School	Benzene 24 hr		2.7	2025			0	2.459	2.467	0%	2	2	0%
Lambton - closest to ROW	Residential	Benzene 24 hr		2.7	2025			0	2.411	2.434	1%	2	2	0%
Northway and Norfolk - middle of neighbourhood	Residential	Benzene 24 hr		2.7	2025			0	2.435	2.426	0%	2	2	0%
Bellewood Estates	Residential	Benzene 24 hr		2.7	2025			0	2.398	2.407	0%	2	2	0%
Lambton - 150 m from ROW	Residential	Benzene 24 hr		2.7	2025			0	2.39	2.389	0%	2	2	0%
Bellewood Estates	Residential	Benzene 24 hr		2.7	2025			0	2.378	2.385	0%	2	2	0%
Huron Estates	Residential	Benzene 24 hr		2.7	2025			0	2.371	2.373	0%	2	2	0%
Reddock	Residential	Benzene 24 hr		2.7	2025			0	2.362	2.374	1%	2	2	0%
10th and Todd	Residential	Benzene 24 hr		2.7	2025			0	2.384	2.404	1%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Benzene 24 hr		2.7	2025			0	2.388	2.443	2%	2	2	1%
Villa Borghese	Residential	Benzene 24 hr		2.7	2025			0	2.372	2.4	1%	2	2	1%
Kendleton Court	Residential	Benzene 24 hr		2.7	2025			0	2.382	2.397	1%	2	2	1%
Villa Borghese	Residential	Benzene 24 hr		2.7	2025			0	2.358	2.376	1%	2	2	0%
Villa Borghese	Residential	Benzene 24 hr		2.7	2025			0	2.369	2.384	1%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Benzene 24 hr		2.7	2025			0	2.354	2.363	0%	2	2	0%
Villa Paradiso	Residential	Benzene 24 hr		2.7	2025			0	2.355	2.372	1%	2	2	0%
Grosvenor to Croydon	Residential	Benzene 24 hr		2.7	2025			0	2.36	2.407	2%	2	2	1%
Alpen Rose	Residential	Benzene 24 hr		2.7	2025			0	2.36	2.388	1%	2	2	0%
Heritage Estates	Residential	Benzene 24 hr		2.7	2025			0	2.343	2.35	0%	2	2	0%
Royal Oak Senior Home	Home	Benzene 24 hr		2.7	2025			0	2.353	2.357	0%	2	2	0%
Royal Oak Senior Home	Home	Benzene 24 hr		2.7	2025			0	2.356	2.356	0%	2	2	0%
Spring Garden	Residential	Benzene 24 hr		2.7	2025			0	2.386	2.412	1%	2	2	1%
Spring Garden	Residential	Benzene 24 hr		2.7	2025			0	2.391	2.413	1%	2	2	1%
Spring Garden	Residential	Benzene 24 hr		2.7	2025			0	2.393	2.422	1%	2	2	1%
Association for Persons with Physical Disabilities	Special Needs	Benzene 24 hr		2.7	2025			0	2.374	2.394	1%	2	2	0%
Armanda	Residential	Benzene 24 hr		2.7	2025			0	2.355	2.379	1%	2	2	0%
Chelsea	Residential	Benzene 24 hr		2.7	2025			0	2.374	2.418	2%	2	2	0%
Broadway Park	Parkland	Benzene 24 hr		2.7	2025			0	2.353	2.373	1%	2	2	1%
Ojibway Park	Parkland	Benzene 24 hr		2.7	2025			0	2.34	2.345	0%	2	2	0%
Malden Park	Parkland	Benzene 24 hr		2.7	2025			0	2.363	2.387	1%	2	2	0%
Victoria Memorial Park	Parkland	Benzene 24 hr		2.7	2025			0	2.327	2.356	1%	2	2	0%
Sandwich First Baptist	Church	Benzene 24 hr		2.7	2025			0	2.355	2.338	-1%	2	2	-1%
A-Unknown Church	Church	Benzene 24 hr		2.7	2025			0	2.372	2.338	-1%	2	2	-1%
Museum Land Mark	Museum	Benzene 24 hr		2.7	2025			0	2.356	2.338	-1%	2	2	-1%
Indian Memorial Park	Parkland	Benzene 24 hr		2.7	2025			0	2.585	2.602	1%	2	2	0%
Bellwood Park	Parkland	Benzene 24 hr		2.7	2025			0	2.39	2.407	1%	2	2	0%
Beals Park	Parkland	Benzene 24 hr		2.7	2025			0	2.363	2.362	0%	2	2	0%
Oakwood Public School	School	Benzene 24 hr		2.7	2025			0	2.379	2.371	0%	2	2	0%
Oakwood Bible Chapel	Church	Benzene 24 hr		2.7	2025			0	2.417	2.398	-1%	2	2	-1%
C-Unknown Church	Church	Benzene 24 hr		2.7	2025			0	2.444	2.421	-1%	2	2	-1%
Our Lady Of Mount Caramel Separate School	School	Benzene 24 hr		2.7	2025			0	2.384	2.367	-1%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Benzene 24 hr		2.7	2025			0	2.379	2.356	-1%	2	2	-1%
Veteren Memorial Park	Parkland	Benzene 24 hr		2.7	2025			0	2.347	2.349	0%	2	2	0%
St Charbel Maronite Catholic Church	Church	Benzene 24 hr		2.7	2025			0	2.353	2.369	1%	2	2	1%
1- Unknown - Park & Golf Course	Golf Course	Benzene 24 hr		2.7	2025			0	2.328	2.342	1%	2	2	0%
St Stevens cemetery	Cemetery	Benzene 24 hr		2.7	2025			0	2.33	2.376	2%	2	2	1%
St Stevens Church	Church	Benzene 24 hr		2.7	2025			0	2.329	2.413	4%	2	2	2%
Sikh Cultural Society	Centre	Benzene 24 hr		2.7	2025			0	2.344	2.427	4%	2	2	2%
Apostolic Christ Church	Church	Benzene 24 hr		2.7	2025			0	2.339	2.407	3%	2	2	1%
Heavenly Rest Cemetery	Cemetery	Benzene 24 hr		2.7	2025			0	2.333	2.362	1%	2	2	1%
St. Nicholas Macedonian Easter	Church	Benzene 24 hr		2.7	2025			0	2.34	2.403	3%	2	2	1%
D-Unknown Church	Church	Benzene 24 hr		2.7	2025			0	2.348	2.385	2%	2	2	1%
J.Jenner Park	Parkland	Benzene 24 hr		2.7	2025			0	2.35	2.375	1%	2	2	0%
Heritage Park	Parkland	Benzene 24 hr		2.7	2025			0	2.345	2.358	1%	2	2	0%
St Clair Park	Parkland	Benzene 24 hr		2.7	2025			0	2.346	2.361	1%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Benzene 24 hr		2.7	2025			0	2.373	2.38	0%	2	2	0%
St Clair College	School	Benzene 24 hr		2.7	2025			0	2.35	2.353	0%	2	2	0%
Bellwood Public School	School	Benzene 24 hr		2.7	2025			0	2.385	2.401	1%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Benzene 24 hr		2.7	2025			0	2.356	2.357	0%	2	2	0%
B-Unknown Church	Church	Benzene 24 hr		2.7	2025			0	2.365	2.362	0%	2	2	0%

TABLE D6C – BENZENE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Benzene 24 hr		2.7	2035			0	2.551	2.562	0%	2	2	1%
Mangin Cr	Residential	Benzene 24 hr		2.7	2035			0	2.514	2.563	2%	2	2	1%
Northway and Norfolk - closest to ROW	Norfolk	Benzene 24 hr		2.7	2035			0	2.499	2.501	0%	2	2	1%
Northway and Norfolk - closest to ROW	Norfolk	Benzene 24 hr		2.7	2035			0	2.496	2.512	1%	2	2	1%
St. Cecile Academic Music - Grand Marais	School	Benzene 24 hr		2.7	2035			0	2.461	2.481	1%	2	2	1%
Lambton - closest to ROW	Residential	Benzene 24 hr		2.7	2035			0	2.413	2.444	1%	2	2	1%
Northway and Norfolk - middle of neighbourhood	Residential	Benzene 24 hr		2.7	2035			0	2.438	2.437	0%	2	2	0%
Bellewood Estates	Residential	Benzene 24 hr		2.7	2035			0	2.401	2.415	1%	2	2	0%
Lambton - 150 m from ROW	Residential	Benzene 24 hr		2.7	2035			0	2.391	2.396	0%	2	2	0%
Bellewood Estates	Residential	Benzene 24 hr		2.7	2035			0	2.379	2.391	1%	2	2	0%
Huron Estates	Residential	Benzene 24 hr		2.7	2035			0	2.373	2.378	0%	2	2	0%
Reddock	Residential	Benzene 24 hr		2.7	2035			0	2.363	2.382	1%	2	2	0%
10th and Todd	Residential	Benzene 24 hr		2.7	2035			0	2.386	2.417	1%	2	2	0%
Hearthwood - within 50 m of ROW	Residential	Benzene 24 hr		2.7	2035			0	2.388	2.451	3%	2	2	2%
Villa Borghese	Residential	Benzene 24 hr		2.7	2035			0	2.371	2.403	1%	2	2	1%
Kendleton Court	Residential	Benzene 24 hr		2.7	2035			0	2.382	2.402	1%	2	2	1%
Villa Borghese	Residential	Benzene 24 hr		2.7	2035			0	2.359	2.379	1%	2	2	0%
Villa Borghese	Residential	Benzene 24 hr		2.7	2035			0	2.372	2.386	1%	2	2	0%
Hearthwood - within 100 m of ROW	Residential	Benzene 24 hr		2.7	2035			0	2.354	2.366	1%	2	2	0%
Villa Paradiso	Residential	Benzene 24 hr		2.7	2035			0	2.355	2.376	1%	2	2	0%
Grosvenor to Croydon	Residential	Benzene 24 hr		2.7	2035			0	2.361	2.413	2%	2	2	1%
Alpen Rose	Residential	Benzene 24 hr		2.7	2035			0	2.361	2.391	1%	2	2	0%
Heritage Estates	Residential	Benzene 24 hr		2.7	2035			0	2.343	2.353	0%	2	2	0%
Royal Oak Senior Home	Home	Benzene 24 hr		2.7	2035			0	2.354	2.361	0%	2	2	0%
Royal Oak Senior Home	Home	Benzene 24 hr		2.7	2035			0	2.357	2.363	0%	2	2	0%
Spring Garden	Residential	Benzene 24 hr		2.7	2035			0	2.388	2.422	1%	2	2	1%
Spring Garden	Residential	Benzene 24 hr		2.7	2035			0	2.394	2.422	1%	2	2	1%
Spring Garden	Residential	Benzene 24 hr		2.7	2035			0	2.396	2.43	1%	2	2	1%
Association for Persons with Physical Disabilities	Special Needs	Benzene 24 hr		2.7	2035			0	2.376	2.403	1%	2	2	1%
Armanda	Residential	Benzene 24 hr		2.7	2035			0	2.357	2.387	1%	2	2	1%
Chelsea	Residential	Benzene 24 hr		2.7	2035			0	2.375	2.425	2%	2	2	1%
Broadway Park	Parkland	Benzene 24 hr		2.7	2035			0	2.354	2.38	1%	2	2	1%
Ojibway Park	Parkland	Benzene 24 hr		2.7	2035			0	2.34	2.348	0%	2	2	0%
Malden Park	Parkland	Benzene 24 hr		2.7	2035			0	2.365	2.398	1%	2	2	1%
Victoria Memorial Park	Parkland	Benzene 24 hr		2.7	2035			0	2.327	2.359	1%	2	2	1%
Sandwich First Baptist	Church	Benzene 24 hr		2.7	2035			0	2.358	2.341	-1%	2	2	-1%
A-Unknown Church	Church	Benzene 24 hr		2.7	2035			0	2.375	2.341	-1%	2	2	-1%
Museum Land Mark	Museum	Benzene 24 hr		2.7	2035			0	2.359	2.341	-1%	2	2	-1%
Indian Memorial Park	Parkland	Benzene 24 hr		2.7	2035			0	2.59	2.624	1%	2	2	1%
Bellwood Park	Parkland	Benzene 24 hr		2.7	2035			0	2.393	2.416	1%	2	2	0%
Beals Park	Parkland	Benzene 24 hr		2.7	2035			0	2.364	2.366	0%	2	2	0%
Oakwood Public School	School	Benzene 24 hr		2.7	2035			0	2.382	2.378	0%	2	2	0%
Oakwood Bible Chapel	Church	Benzene 24 hr		2.7	2035			0	2.421	2.406	-1%	2	2	-1%
C-Unknown Church	Church	Benzene 24 hr		2.7	2035			0	2.449	2.432	-1%	2	2	0%
Our Lady Of Mount Caramel Separate School	School	Benzene 24 hr		2.7	2035			0	2.386	2.371	-1%	2	2	0%
Our Lady Of Mount Caramel Catholic Church	Church	Benzene 24 hr		2.7	2035			0	2.381	2.359	-1%	2	2	-1%
Veteren Memorial Park	Parkland	Benzene 24 hr		2.7	2035			0	2.347	2.351	0%	2	2	0%
St Charbel Maronite Catholic Church	Church	Benzene 24 hr		2.7	2035			0	2.353	2.372	1%	2	2	1%
1- Unknown - Park & Golf Course	Golf Course	Benzene 24 hr		2.7	2035			0	2.329	2.344	1%	2	2	0%
St Stevens cemetery	Cemetery	Benzene 24 hr		2.7	2035			0	2.33	2.379	2%	2	2	1%
St Stevens Church	Church	Benzene 24 hr		2.7	2035			0	2.329	2.42	4%	2	2	2%
Sikh Cultural Society	Centre	Benzene 24 hr		2.7	2035			0	2.345	2.434	4%	2	2	2%
Apostolic Christ Church	Church	Benzene 24 hr		2.7	2035			0	2.342	2.414	3%	2	2	1%
Heavenly Rest Cemetery	Cemetery	Benzene 24 hr		2.7	2035			0	2.334	2.366	1%	2	2	1%
St. Nicholas Macedonian Easter	Church	Benzene 24 hr		2.7	2035			0	2.34	2.409	3%	2	2	1%
D-Unknown Church	Church	Benzene 24 hr		2.7	2035			0	2.349	2.391	2%	2	2	1%
J.Jenner Park	Parkland	Benzene 24 hr		2.7	2035			0	2.352	2.38	1%	2	2	0%
Heritage Park	Parkland	Benzene 24 hr		2.7	2035			0	2.345	2.361	1%	2	2	0%
St Clair Park	Parkland	Benzene 24 hr		2.7	2035			0	2.346	2.362	1%	2	2	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Benzene 24 hr		2.7	2035			0	2.372	2.384	1%	2	2	0%
St Clair College	School	Benzene 24 hr		2.7	2035			0	2.35	2.356	0%	2	2	0%
Bellwood Public School	School	Benzene 24 hr		2.7	2035			0	2.388	2.41	1%	2	2	0%
Ecole Monseigneur Jean-Noel	School	Benzene 24 hr		2.7	2035			0	2.357	2.36	0%	2	2	0%
B-Unknown Church	Church	Benzene 24 hr		2.7	2035			0	2.366	2.367	0%	2	2	0%

TABLE D7A – FORMALDEHYDE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.297	4.226	-2%	4	4	-1%
Mangin Cr	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.273	4.228	-1%	4	4	0%
Northway and Norfolk - closest to ROW	Norfolk	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.266	4.21	-1%	4	4	0%
Northway and Norfolk - closest to ROW	Norfolk	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.263	4.218	-1%	4	4	0%
St. Cecile Academic Music - Grand Marais	School	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.221	4.191	-1%	4	4	0%
Lambton - closest to ROW	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.191	4.19	0%	4	4	0%
Northway and Norfolk - middle of neighbourhood	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.21	4.174	-1%	4	4	0%
Bellewood Estates	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.174	4.158	0%	4	4	0%
Lambton - 150 m from ROW	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.159	4.157	0%	4	4	0%
Bellewood Estates	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.154	4.146	0%	4	4	0%
Huron Estates	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.145	4.141	0%	4	4	0%
Reddock	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.142	4.144	0%	4	4	0%
10th and Todd	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.151	4.152	0%	4	4	0%
Hearthwood - within 50 m of ROW	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.177	4.187	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.158	4.152	0%	4	4	0%
Kendleton Court	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.164	4.168	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.141	4.138	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.148	4.141	0%	4	4	0%
Hearthwood - within 100 m of ROW	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.138	4.14	0%	4	4	0%
Villa Paradiso	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.138	4.146	0%	4	4	0%
Grosvenor to Croydon	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.133	4.17	1%	4	4	0%
Alpen Rose	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.135	4.145	0%	4	4	0%
Heritage Estates	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.127	4.129	0%	4	4	0%
Royal Oak Senior Home	Home	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.136	4.132	0%	4	4	0%
Royal Oak Senior Home	Home	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.14	4.134	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.143	4.155	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.149	4.155	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.157	4.162	0%	4	4	0%
Association for Persons with Physical Disabilities	Special Needs	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.142	4.147	0%	4	4	0%
Armanda	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.127	4.138	0%	4	4	0%
Chelsea	Residential	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.148	4.179	1%	4	4	0%
Broadway Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.121	4.157	1%	4	4	1%
Ojibway Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.116	4.121	0%	4	4	0%
Malden Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.133	4.143	0%	4	4	0%
Victoria Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.112	4.131	0%	4	4	0%
Sandwich First Baptist	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.124	4.119	0%	4	4	0%
A-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.13	4.12	0%	4	4	0%
Museum Land Mark	Museum	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.124	4.119	0%	4	4	0%
Indian Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.258	4.239	0%	4	4	0%
Bellwood Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.157	4.156	0%	4	4	0%
Beals Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.143	4.133	0%	4	4	0%
Oakwood Public School	School	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.155	4.136	0%	4	4	0%
Oakwood Bible Chapel	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.18	4.148	-1%	4	4	-1%
C-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.197	4.159	-1%	4	4	-1%
Our Lady Of Mount Caramel Separate School	School	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.15	4.144	0%	4	4	0%
Our Lady Of Mount Caramel Catholic Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.143	4.135	0%	4	4	0%
Veteren Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.127	4.128	0%	4	4	0%
St Charbel Maronite Catholic Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.128	4.15	1%	4	4	0%
1- Unknown - Park & Golf Course	Golf Course	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.112	4.126	0%	4	4	0%
St Stevens cemetery	Cemetery	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.112	4.133	1%	4	4	0%
St Stevens Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.112	4.149	1%	4	4	0%
Sikh Cultural Society	Centre	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.114	4.146	1%	4	4	0%
Apostolic Christ Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.113	4.138	1%	4	4	0%
Heavenly Rest Cemetery	Cemetery	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.113	4.126	0%	4	4	0%
St. Nicholas Macedonian Easter	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.113	4.137	1%	4	4	0%
D-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.121	4.139	0%	4	4	0%
J.Jenner Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.12	4.135	0%	4	4	0%
Heritage Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.126	4.134	0%	4	4	0%
St Clair Park	Parkland	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.132	4.132	0%	4	4	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.159	4.152	0%	4	4	0%
St Clair College	School	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.133	4.13	0%	4	4	0%
Bellwood Public School	School	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.153	4.152	0%	4	4	0%
Ecole Monseigneur Jean-Noel	School	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.137	4.132	0%	4	4	0%
B-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2015	0	0	0	4.142	4.133	0%	4	4	0%

TABLE D7B – FORMALDEHYDE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.291	4.224	-2%	4	4	0%
Mangin Cr	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.268	4.239	-1%	4	4	0%
Northway and Norfolk - closest to ROW	Norfolk	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.261	4.211	-1%	4	4	0%
Northway and Norfolk - closest to ROW	Norfolk	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.258	4.219	-1%	4	4	0%
St. Cecile Academic Music - Grand Marais	School	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.218	4.196	-1%	4	4	0%
Lambton - closest to ROW	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.189	4.194	0%	4	4	0%
Northway and Norfolk - middle of neighbourhood	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.207	4.176	-1%	4	4	0%
Bellewood Estates	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.171	4.162	0%	4	4	0%
Lambton - 150 m from ROW	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.157	4.159	0%	4	4	0%
Bellewood Estates	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.151	4.148	0%	4	4	0%
Huron Estates	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.143	4.142	0%	4	4	0%
Reddock	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.141	4.146	0%	4	4	0%
10th and Todd	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.149	4.152	0%	4	4	0%
Hearthwood - within 50 m of ROW	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.174	4.185	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.157	4.154	0%	4	4	0%
Kendleton Court	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.162	4.172	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.14	4.14	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.147	4.142	0%	4	4	0%
Hearthwood - within 100 m of ROW	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.137	4.142	0%	4	4	0%
Villa Paradiso	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.137	4.149	0%	4	4	0%
Grosvenor to Croydon	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.132	4.171	1%	4	4	0%
Alpen Rose	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.133	4.144	0%	4	4	0%
Heritage Estates	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.126	4.13	0%	4	4	0%
Royal Oak Senior Home	Home	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.135	4.133	0%	4	4	0%
Royal Oak Senior Home	Home	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.138	4.135	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.141	4.154	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.147	4.156	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.155	4.165	0%	4	4	0%
Association for Persons with Physical Disabilities	Special Needs	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.14	4.148	0%	4	4	0%
Armanda	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.125	4.141	0%	4	4	0%
Chelsea	Residential	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.146	4.181	1%	4	4	0%
Broadway Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.12	4.16	1%	4	4	1%
Ojibway Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.115	4.122	0%	4	4	0%
Malden Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.131	4.148	0%	4	4	0%
Victoria Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.111	4.131	0%	4	4	0%
Sandwich First Baptist	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.123	4.12	0%	4	4	0%
A-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.129	4.121	0%	4	4	0%
Museum Land Mark	Museum	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.123	4.12	0%	4	4	0%
Indian Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.248	4.241	0%	4	4	0%
Bellwood Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.154	4.156	0%	4	4	0%
Beals Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.141	4.134	0%	4	4	0%
Oakwood Public School	School	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.153	4.137	0%	4	4	0%
Oakwood Bible Chapel	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.176	4.149	-1%	4	4	0%
C-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.192	4.158	-1%	4	4	-1%
Our Lady Of Mount Caramel Separate School	School	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.148	4.145	0%	4	4	0%
Our Lady Of Mount Caramel Catholic Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.141	4.136	0%	4	4	0%
Veteren Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.126	4.129	0%	4	4	0%
St Charbel Maronite Catholic Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.125	4.152	1%	4	4	0%
1- Unknown - Park & Golf Course	Golf Course	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.111	4.127	0%	4	4	0%
St Stevens cemetery	Cemetery	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.112	4.131	0%	4	4	0%
St Stevens Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.111	4.146	1%	4	4	0%
Sikh Cultural Society	Centre	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.113	4.142	1%	4	4	0%
Apostolic Christ Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.113	4.136	1%	4	4	0%
Heavenly Rest Cemetery	Cemetery	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.113	4.125	0%	4	4	0%
St. Nicholas Macedonian Easter	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.112	4.135	1%	4	4	0%
D-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.12	4.137	0%	4	4	0%
J.Jenner Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.119	4.135	0%	4	4	0%
Heritage Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.125	4.134	0%	4	4	0%
St Clair Park	Parkland	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.131	4.133	0%	4	4	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.158	4.154	0%	4	4	0%
St Clair College	School	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.133	4.131	0%	4	4	0%
Bellwood Public School	School	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.151	4.153	0%	4	4	0%
Ecole Monseigneur Jean-Noel	School	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.135	4.133	0%	4	4	0%
B-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2025	0	0	0	4.141	4.133	0%	4	4	0%

TABLE D7C – FORMALDEHYDE MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.311	4.243	-2%	4	4	0%
Mangin Cr	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.287	4.266	0%	4	4	0%
Northway and Norfolk - closest to ROW	Norfolk	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.28	4.226	-1%	4	4	0%
Northway and Norfolk - closest to ROW	Norfolk	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.277	4.236	-1%	4	4	0%
St. Cecile Academic Music - Grand Marais	School	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.23	4.211	0%	4	4	0%
Lambton - closest to ROW	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.199	4.207	0%	4	4	0%
Northway and Norfolk - middle of neighbourhood	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.219	4.187	-1%	4	4	0%
Bellewood Estates	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.178	4.173	0%	4	4	0%
Lambton - 150 m from ROW	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.163	4.167	0%	4	4	0%
Bellewood Estates	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.157	4.157	0%	4	4	0%
Huron Estates	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.148	4.148	0%	4	4	0%
Reddock	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.146	4.153	0%	4	4	0%
10th and Todd	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.156	4.16	0%	4	4	0%
Hearthwood - within 50 m of ROW	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.183	4.195	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.164	4.159	0%	4	4	0%
Kendleton Court	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.169	4.183	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.145	4.144	0%	4	4	0%
Villa Borghese	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.152	4.146	0%	4	4	0%
Hearthwood - within 100 m of ROW	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.141	4.147	0%	4	4	0%
Villa Paradiso	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.141	4.156	0%	4	4	0%
Grosvenor to Croydon	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.135	4.178	1%	4	4	0%
Alpen Rose	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.135	4.15	0%	4	4	0%
Heritage Estates	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.129	4.133	0%	4	4	0%
Royal Oak Senior Home	Home	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.138	4.139	0%	4	4	0%
Royal Oak Senior Home	Home	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.143	4.141	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.144	4.169	1%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.15	4.169	0%	4	4	0%
Spring Garden	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.16	4.178	0%	4	4	0%
Association for Persons with Physical Disabilities	Special Needs	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.143	4.159	0%	4	4	0%
Armanda	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.127	4.148	1%	4	4	0%
Chelsea	Residential	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.15	4.191	1%	4	4	0%
Broadway Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.121	4.169	1%	4	4	1%
Ojibway Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.116	4.126	0%	4	4	0%
Malden Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.134	4.156	1%	4	4	0%
Victoria Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.113	4.135	1%	4	4	0%
Sandwich First Baptist	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.125	4.123	0%	4	4	0%
A-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.132	4.124	0%	4	4	0%
Museum Land Mark	Museum	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.125	4.123	0%	4	4	0%
Indian Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.257	4.257	0%	4	4	0%
Bellwood Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.159	4.166	0%	4	4	0%
Beals Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.146	4.139	0%	4	4	0%
Oakwood Public School	School	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.161	4.143	0%	4	4	0%
Oakwood Bible Chapel	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.187	4.156	-1%	4	4	-1%
C-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.204	4.167	-1%	4	4	-1%
Our Lady Of Mount Caramel Separate School	School	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.153	4.151	0%	4	4	0%
Our Lady Of Mount Caramel Catholic Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.145	4.141	0%	4	4	0%
Veteren Memorial Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.129	4.133	0%	4	4	0%
St Charbel Maronite Catholic Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.127	4.161	1%	4	4	0%
1- Unknown - Park & Golf Course	Golf Course	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.112	4.132	0%	4	4	0%
St Stevens cemetery	Cemetery	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.113	4.134	1%	4	4	0%
St Stevens Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.112	4.15	1%	4	4	0%
Sikh Cultural Society	Centre	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.114	4.145	1%	4	4	0%
Apostolic Christ Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.114	4.14	1%	4	4	0%
Heavenly Rest Cemetery	Cemetery	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.114	4.128	0%	4	4	0%
St. Nicholas Macedonian Easter	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.114	4.139	1%	4	4	0%
D-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.121	4.141	0%	4	4	0%
J.Jenner Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.12	4.139	0%	4	4	0%
Heritage Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.128	4.139	0%	4	4	0%
St Clair Park	Parkland	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.135	4.137	0%	4	4	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.166	4.161	0%	4	4	0%
St Clair College	School	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.137	4.135	0%	4	4	0%
Bellwood Public School	School	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.155	4.162	0%	4	4	0%
Ecole Monseigneur Jean-Noel	School	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.139	4.138	0%	4	4	0%
B-Unknown Church	Church	Formaldehyde 24 hr	65	4.1	2035	0	0	0	4.146	4.138	0%	4	4	0%

TABLE D8A – PM2.5 MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	PM25 24 hr	30	21	2015	0	0	0	24	22	-8%	22	21	-4%
Mangin Cr	Residential	PM25 24 hr	30	21	2015	0	0	0	23.7	22.4	-5%	22	22	-2%
Northway and Norfolk - closest to ROW	Norfolk	PM25 24 hr	30	21	2015	0	0	0	23.7	22.5	-5%	22	22	-2%
Northway and Norfolk - closest to ROW	Norfolk	PM25 24 hr	30	21	2015	0	0	0	23.6	22.6	-4%	22	22	-2%
St. Cecile Academic Music - Grand Marais	School	PM25 24 hr	30	21	2015	0	0	0	22.8	22.1	-3%	22	22	-2%
Lambton - closest to ROW	Residential	PM25 24 hr	30	21	2015	0	0	0	22.5	22	-2%	22	22	-1%
Northway and Norfolk - middle of neighbourhood	Residential	PM25 24 hr	30	21	2015	0	0	0	22.6	21.8	-4%	22	22	-1%
Bellewood Estates	Residential	PM25 24 hr	30	21	2015	0	0	0	22	21.8	-1%	22	21	-1%
Lambton - 150 m from ROW	Residential	PM25 24 hr	30	21	2015	0	0	0	22	21.7	-1%	22	21	-1%
Bellewood Estates	Residential	PM25 24 hr	30	21	2015	0	0	0	21.6	21.6	0%	21	21	-1%
Huron Estates	Residential	PM25 24 hr	30	21	2015	0	0	0	21.7	21.5	-1%	21	21	0%
Reddock	Residential	PM25 24 hr	30	21	2015	0	0	0	21.7	21.6	0%	21	21	0%
10th and Todd	Residential	PM25 24 hr	30	21	2015	0	0	0	21.7	21.6	0%	21	21	0%
Hearthwood - within 50 m of ROW	Residential	PM25 24 hr	30	21	2015	0	0	0	22.2	22.3	0%	22	22	0%
Villa Borghese	Residential	PM25 24 hr	30	21	2015	0	0	0	22.1	22	0%	22	22	0%
Kendleton Court	Residential	PM25 24 hr	30	21	2015	0	0	0	22.1	22.4	1%	22	22	1%
Villa Borghese	Residential	PM25 24 hr	30	21	2015	0	0	0	21.7	21.7	0%	21	21	0%
Villa Borghese	Residential	PM25 24 hr	30	21	2015	0	0	0	21.6	21.7	0%	21	21	-1%
Hearthwood - within 100 m of ROW	Residential	PM25 24 hr	30	21	2015	0	0	0	21.5	21.6	0%	21	21	0%
Villa Paradiso	Residential	PM25 24 hr	30	21	2015	0	0	0	21.6	22	2%	21	21	0%
Grosvenor to Croydon	Residential	PM25 24 hr	30	21	2015	0	0	0	21.4	22.1	3%	21	22	1%
Alpen Rose	Residential	PM25 24 hr	30	21	2015	0	0	0	21.4	21.5	0%	21	21	0%
Heritage Estates	Residential	PM25 24 hr	30	21	2015	0	0	0	21.3	21.4	0%	21	21	0%
Royal Oak Senior Home	Home	PM25 24 hr	30	21	2015	0	0	0	21.3	21.3	0%	21	21	0%
Royal Oak Senior Home	Home	PM25 24 hr	30	21	2015	0	0	0	21.3	21.4	0%	21	21	0%
Spring Garden	Residential	PM25 24 hr	30	21	2015	0	0	0	21.3	21.6	1%	21	21	1%
Spring Garden	Residential	PM25 24 hr	30	21	2015	0	0	0	21.4	21.5	0%	21	21	1%
Spring Garden	Residential	PM25 24 hr	30	21	2015	0	0	0	21.6	21.6	0%	21	21	0%
Association for Persons with Physical Disabilities	Special Needs	PM25 24 hr	30	21	2015	0	0	0	21.4	21.4	0%	21	21	0%
Armanda	Residential	PM25 24 hr	30	21	2015	0	0	0	21.2	21.4	1%	21	21	0%
Chelsea	Residential	PM25 24 hr	30	21	2015	0	0	0	21.7	22.4	3%	21	22	1%
Broadway Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.1	22.5	7%	21	22	4%
Ojibway Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.1	21.4	1%	21	21	0%
Malden Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.3	21.5	1%	21	21	0%
Victoria Memorial Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21	21.2	1%	21	21	0%
Sandwich First Baptist	Church	PM25 24 hr	30	21	2015	0	0	0	21.4	21.2	-1%	21	21	-1%
A-Unknown Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.7	21.2	-2%	21	21	-2%
Museum Land Mark	Museum	PM25 24 hr	30	21	2015	0	0	0	21.4	21.2	-1%	21	21	-1%
Indian Memorial Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.9	21.4	-2%	21	21	-1%
Bellwood Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.6	21.4	-1%	21	21	0%
Beals Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.6	21.4	-1%	21	21	-1%
Oakwood Public School	School	PM25 24 hr	30	21	2015	0	0	0	21.7	21.4	-1%	21	21	-1%
Oakwood Bible Chapel	Church	PM25 24 hr	30	21	2015	0	0	0	22.1	21.5	-3%	22	21	-2%
C-Unknown Church	Church	PM25 24 hr	30	21	2015	0	0	0	22.3	21.6	-3%	22	21	-2%
Our Lady Of Mount Caramel Separate School	School	PM25 24 hr	30	21	2015	0	0	0	22	21.8	-1%	22	21	0%
Our Lady Of Mount Caramel Catholic Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.8	21.6	-1%	21	21	0%
Veteren Memorial Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.4	21.4	0%	21	21	0%
St Charbel Maronite Catholic Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.3	21.7	2%	21	21	0%
1- Unknown - Park & Golf Course	Golf Course	PM25 24 hr	30	21	2015	0	0	0	21.1	21.3	1%	21	21	0%
St Stevens cemetery	Cemetery	PM25 24 hr	30	21	2015	0	0	0	21.1	21	0%	21	21	0%
St Stevens Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.1	21	0%	21	21	0%
Sikh Cultural Society	Centre	PM25 24 hr	30	21	2015	0	0	0	21.4	21.1	-1%	21	21	-1%
Apostolic Christ Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.3	21.2	0%	21	21	-1%
Heavenly Rest Cemetery	Cemetery	PM25 24 hr	30	21	2015	0	0	0	21.2	21.2	0%	21	21	0%
St. Nicholas Macedonian Easter	Church	PM25 24 hr	30	21	2015	0	0	0	21.3	21.2	0%	21	21	-1%
D-Unknown Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.4	21.2	-1%	21	21	0%
J.Jenner Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.5	21.5	0%	21	21	0%
Heritage Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.3	21.5	1%	21	21	0%
St Clair Park	Parkland	PM25 24 hr	30	21	2015	0	0	0	21.4	21.4	0%	21	21	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	PM25 24 hr	30	21	2015	0	0	0	22.3	22.1	-1%	22	22	0%
St Clair College	School	PM25 24 hr	30	21	2015	0	0	0	21.7	21.5	-1%	21	21	0%
Bellwood Public School	School	PM25 24 hr	30	21	2015	0	0	0	21.5	21.4	0%	21	21	0%
Ecole Monseigneur Jean-Noel	School	PM25 24 hr	30	21	2015	0	0	0	21.4	21.3	0%	21	21	0%
B-Unknown Church	Church	PM25 24 hr	30	21	2015	0	0	0	21.6	21.4	-1%	21	21	-1%

TABLE D8B – PM2.5 MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	PM25 24 hr	30	21	2025	0	0	0	24.2	23	-5%	23	22	-3%
Mangin Cr	Residential	PM25 24 hr	30	21	2025	0	0	0	24	24.5	2%	22	23	2%
Northway and Norfolk - closest to ROW	Norfolk	PM25 24 hr	30	21	2025	0	0	0	23.9	23.1	-3%	22	22	0%
Northway and Norfolk - closest to ROW	Norfolk	PM25 24 hr	30	21	2025	0	0	0	23.9	23.1	-3%	22	22	0%
St. Cecile Academic Music - Grand Marais	School	PM25 24 hr	30	21	2025	0	0	0	22.9	22.8	0%	22	22	0%
Lambton - closest to ROW	Residential	PM25 24 hr	30	21	2025	0	0	0	22.7	22.9	1%	22	22	1%
Northway and Norfolk - middle of neighbourhood	Residential	PM25 24 hr	30	21	2025	0	0	0	22.8	22.4	-2%	22	22	0%
Bellewood Estates	Residential	PM25 24 hr	30	21	2025	0	0	0	22.1	22.6	2%	22	22	0%
Lambton - 150 m from ROW	Residential	PM25 24 hr	30	21	2025	0	0	0	22.1	22.2	0%	22	22	0%
Bellewood Estates	Residential	PM25 24 hr	30	21	2025	0	0	0	21.7	22.2	2%	21	21	0%
Huron Estates	Residential	PM25 24 hr	30	21	2025	0	0	0	21.8	21.8	0%	21	21	0%
Reddock	Residential	PM25 24 hr	30	21	2025	0	0	0	21.9	21.8	0%	21	21	0%
10th and Todd	Residential	PM25 24 hr	30	21	2025	0	0	0	21.8	21.7	0%	21	21	0%
Hearthwood - within 50 m of ROW	Residential	PM25 24 hr	30	21	2025	0	0	0	23	23.1	0%	22	22	-1%
Villa Borghese	Residential	PM25 24 hr	30	21	2025	0	0	0	22.8	22.1	-3%	22	22	-2%
Kendleton Court	Residential	PM25 24 hr	30	21	2025	0	0	0	22.8	23.1	1%	22	22	2%
Villa Borghese	Residential	PM25 24 hr	30	21	2025	0	0	0	22.2	21.7	-2%	22	21	-1%
Villa Borghese	Residential	PM25 24 hr	30	21	2025	0	0	0	22.1	21.8	-1%	22	21	-1%
Hearthwood - within 100 m of ROW	Residential	PM25 24 hr	30	21	2025	0	0	0	21.8	22	1%	21	21	0%
Villa Paradiso	Residential	PM25 24 hr	30	21	2025	0	0	0	22.1	22.5	2%	22	22	0%
Grosvenor to Croydon	Residential	PM25 24 hr	30	21	2025	0	0	0	21.6	22.9	6%	21	22	2%
Alpen Rose	Residential	PM25 24 hr	30	21	2025	0	0	0	21.7	22	1%	21	22	1%
Heritage Estates	Residential	PM25 24 hr	30	21	2025	0	0	0	21.6	21.7	0%	21	21	0%
Royal Oak Senior Home	Home	PM25 24 hr	30	21	2025	0	0	0	21.5	21.4	0%	21	21	-1%
Royal Oak Senior Home	Home	PM25 24 hr	30	21	2025	0	0	0	21.5	21.4	0%	21	21	0%
Spring Garden	Residential	PM25 24 hr	30	21	2025	0	0	0	21.4	22.2	4%	21	22	2%
Spring Garden	Residential	PM25 24 hr	30	21	2025	0	0	0	21.5	22.1	3%	21	22	1%
Spring Garden	Residential	PM25 24 hr	30	21	2025	0	0	0	21.7	22	1%	21	22	1%
Association for Persons with Physical Disabilities	Special Needs	PM25 24 hr	30	21	2025	0	0	0	21.5	21.7	1%	21	21	1%
Armanda	Residential	PM25 24 hr	30	21	2025	0	0	0	21.3	21.7	2%	21	21	1%
Chelsea	Residential	PM25 24 hr	30	21	2025	0	0	0	22	23.2	5%	22	22	2%
Broadway Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.1	23	9%	21	22	6%
Ojibway Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.1	21.5	2%	21	21	1%
Malden Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.4	22.2	4%	21	22	2%
Victoria Memorial Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.1	21.4	1%	21	21	1%
Sandwich First Baptist	Church	PM25 24 hr	30	21	2025	0	0	0	21.5	21.4	0%	21	21	0%
A-Unknown Church	Church	PM25 24 hr	30	21	2025	0	0	0	22	21.4	-3%	21	21	-1%
Museum Land Mark	Museum	PM25 24 hr	30	21	2025	0	0	0	21.5	21.4	0%	21	21	0%
Indian Memorial Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	22.1	21.7	-2%	22	21	-1%
Bellwood Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.7	21.9	1%	21	21	0%
Beals Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.7	21.5	-1%	21	21	-1%
Oakwood Public School	School	PM25 24 hr	30	21	2025	0	0	0	21.8	21.5	-1%	22	21	-1%
Oakwood Bible Chapel	Church	PM25 24 hr	30	21	2025	0	0	0	22.2	21.6	-3%	22	21	-2%
C-Unknown Church	Church	PM25 24 hr	30	21	2025	0	0	0	22.4	21.6	-4%	22	21	-2%
Our Lady Of Mount Caramel Separate School	School	PM25 24 hr	30	21	2025	0	0	0	22.3	22.2	0%	22	22	0%
Our Lady Of Mount Caramel Catholic Church	Church	PM25 24 hr	30	21	2025	0	0	0	22.1	21.9	-1%	22	22	0%
Veteren Memorial Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.7	21.7	0%	21	21	0%
St Charbel Maronite Catholic Church	Church	PM25 24 hr	30	21	2025	0	0	0	21.3	22.3	5%	21	22	2%
1- Unknown - Park & Golf Course	Golf Course	PM25 24 hr	30	21	2025	0	0	0	21.1	21.6	2%	21	21	1%
St Stevens cemetery	Cemetery	PM25 24 hr	30	21	2025	0	0	0	21.1	21.1	0%	21	21	0%
St Stevens Church	Church	PM25 24 hr	30	21	2025	0	0	0	21.1	21.1	0%	21	21	0%
Sikh Cultural Society	Centre	PM25 24 hr	30	21	2025	0	0	0	21.5	21.3	-1%	21	21	0%
Apostolic Christ Church	Church	PM25 24 hr	30	21	2025	0	0	0	21.4	21.4	0%	21	21	0%
Heavenly Rest Cemetery	Cemetery	PM25 24 hr	30	21	2025	0	0	0	21.2	21.4	1%	21	21	0%
St. Nicholas Macedonian Easter	Church	PM25 24 hr	30	21	2025	0	0	0	21.3	21.3	0%	21	21	0%
D-Unknown Church	Church	PM25 24 hr	30	21	2025	0	0	0	21.4	21.4	0%	21	21	0%
J.Jenner Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.6	21.8	1%	21	21	0%
Heritage Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.5	21.8	1%	21	21	0%
St Clair Park	Parkland	PM25 24 hr	30	21	2025	0	0	0	21.6	21.6	0%	21	21	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	PM25 24 hr	30	21	2025	0	0	0	22.7	22.7	0%	22	22	0%
St Clair College	School	PM25 24 hr	30	21	2025	0	0	0	21.9	21.9	0%	21	21	0%
Bellwood Public School	School	PM25 24 hr	30	21	2025	0	0	0	21.7	21.9	1%	21	21	0%
Ecole Monseigneur Jean-Noel	School	PM25 24 hr	30	21	2025	0	0	0	21.5	21.5	0%	21	21	0%
B-Unknown Church	Church	PM25 24 hr	30	21	2025	0	0	0	21.8	21.4	-2%	21	21	-1%

TABLE D8C – PM2.5 MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	PM25 24 hr	30	21	2035	0	0	0	25.4	23.6	-7%	23	22	-3%
Mangin Cr	Residential	PM25 24 hr	30	21	2035	0	0	0	26.1	25.2	-3%	23	23	0%
Northway and Norfolk - closest to ROW	Norfolk	PM25 24 hr	30	21	2035	0	0	0	25.3	23.1	-9%	23	22	-3%
Northway and Norfolk - closest to ROW	Norfolk	PM25 24 hr	30	21	2035	0	0	0	25.3	23.2	-8%	23	22	-3%
St. Cecile Academic Music - Grand Marais	School	PM25 24 hr	30	21	2035	0	0	0	23.8	23.1	-3%	23	22	-2%
Lambton - closest to ROW	Residential	PM25 24 hr	30	21	2035	0	0	0	23.4	23.1	-1%	22	22	0%
Northway and Norfolk - middle of neighbourhood	Residential	PM25 24 hr	30	21	2035	0	0	0	23.7	22.5	-5%	22	22	-2%
Bellewood Estates	Residential	PM25 24 hr	30	21	2035	0	0	0	22.6	23.1	2%	22	22	0%
Lambton - 150 m from ROW	Residential	PM25 24 hr	30	21	2035	0	0	0	22.5	22.3	-1%	22	22	-1%
Bellewood Estates	Residential	PM25 24 hr	30	21	2035	0	0	0	22.2	22.7	2%	22	22	0%
Huron Estates	Residential	PM25 24 hr	30	21	2035	0	0	0	22.2	21.9	-1%	22	21	-1%
Reddock	Residential	PM25 24 hr	30	21	2035	0	0	0	22.3	22	-1%	22	21	-1%
10th and Todd	Residential	PM25 24 hr	30	21	2035	0	0	0	22.2	22	-1%	22	22	0%
Hearthwood - within 50 m of ROW	Residential	PM25 24 hr	30	21	2035	0	0	0	23.6	23.3	-1%	23	22	-2%
Villa Borghese	Residential	PM25 24 hr	30	21	2035	0	0	0	23.5	22.4	-5%	22	22	-2%
Kendleton Court	Residential	PM25 24 hr	30	21	2035	0	0	0	23.2	23.4	1%	22	22	1%
Villa Borghese	Residential	PM25 24 hr	30	21	2035	0	0	0	22.6	22	-3%	22	22	-1%
Villa Borghese	Residential	PM25 24 hr	30	21	2035	0	0	0	22.5	22	-2%	22	21	-1%
Hearthwood - within 100 m of ROW	Residential	PM25 24 hr	30	21	2035	0	0	0	22.1	22.1	0%	22	22	0%
Villa Paradiso	Residential	PM25 24 hr	30	21	2035	0	0	0	22.4	22.7	1%	22	22	0%
Grosvenor to Croydon	Residential	PM25 24 hr	30	21	2035	0	0	0	21.8	23	6%	21	22	2%
Alpen Rose	Residential	PM25 24 hr	30	21	2035	0	0	0	21.7	21.8	0%	21	22	0%
Heritage Estates	Residential	PM25 24 hr	30	21	2035	0	0	0	21.7	21.7	0%	21	21	0%
Royal Oak Senior Home	Home	PM25 24 hr	30	21	2035	0	0	0	21.7	21.5	-1%	21	21	-1%
Royal Oak Senior Home	Home	PM25 24 hr	30	21	2035	0	0	0	21.7	21.6	0%	21	21	-1%
Spring Garden	Residential	PM25 24 hr	30	21	2035	0	0	0	21.5	22.5	5%	21	22	3%
Spring Garden	Residential	PM25 24 hr	30	21	2035	0	0	0	21.7	22.4	3%	21	22	2%
Spring Garden	Residential	PM25 24 hr	30	21	2035	0	0	0	22	22.6	3%	22	22	2%
Association for Persons with Physical Disabilities	Special Needs	PM25 24 hr	30	21	2035	0	0	0	21.7	22	1%	21	22	1%
Armanda	Residential	PM25 24 hr	30	21	2035	0	0	0	21.4	21.9	2%	21	22	2%
Chelsea	Residential	PM25 24 hr	30	21	2035	0	0	0	22.3	23.4	5%	22	22	1%
Broadway Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.2	23.4	10%	21	22	6%
Ojibway Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.2	21.6	2%	21	21	1%
Malden Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.6	22.3	3%	21	22	1%
Victoria Memorial Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.1	21.5	2%	21	21	1%
Sandwich First Baptist	Church	PM25 24 hr	30	21	2035	0	0	0	21.6	21.4	-1%	21	21	-1%
A-Unknown Church	Church	PM25 24 hr	30	21	2035	0	0	0	22.1	21.4	-3%	22	21	-2%
Museum Land Mark	Museum	PM25 24 hr	30	21	2035	0	0	0	21.6	21.4	-1%	21	21	-1%
Indian Memorial Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	22.6	22	-3%	22	21	-2%
Bellwood Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	22.1	22.3	1%	22	22	0%
Beals Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	22	21.6	-2%	22	21	-1%
Oakwood Public School	School	PM25 24 hr	30	21	2035	0	0	0	22.3	21.7	-3%	22	21	-2%
Oakwood Bible Chapel	Church	PM25 24 hr	30	21	2035	0	0	0	22.7	21.8	-4%	22	21	-3%
C-Unknown Church	Church	PM25 24 hr	30	21	2035	0	0	0	23	21.9	-5%	22	22	-3%
Our Lady Of Mount Caramel Separate School	School	PM25 24 hr	30	21	2035	0	0	0	22.4	22.4	0%	22	22	0%
Our Lady Of Mount Caramel Catholic Church	Church	PM25 24 hr	30	21	2035	0	0	0	22.2	22	-1%	22	22	0%
Veteren Memorial Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.8	21.8	0%	21	21	0%
St Charbel Maronite Catholic Church	Church	PM25 24 hr	30	21	2035	0	0	0	21.5	22.4	4%	21	22	2%
1- Unknown - Park & Golf Course	Golf Course	PM25 24 hr	30	21	2035	0	0	0	21.1	21.7	3%	21	21	1%
St Stevens cemetery	Cemetery	PM25 24 hr	30	21	2035	0	0	0	21.2	21.1	0%	21	21	0%
St Stevens Church	Church	PM25 24 hr	30	21	2035	0	0	0	21.2	21.2	0%	21	21	0%
Sikh Cultural Society	Centre	PM25 24 hr	30	21	2035	0	0	0	21.5	21.3	-1%	21	21	-1%
Apostolic Christ Church	Church	PM25 24 hr	30	21	2035	0	0	0	21.4	21.4	0%	21	21	0%
Heavenly Rest Cemetery	Cemetery	PM25 24 hr	30	21	2035	0	0	0	21.3	21.5	1%	21	21	0%
St. Nicholas Macedonian Easter	Church	PM25 24 hr	30	21	2035	0	0	0	21.4	21.4	0%	21	21	0%
D-Unknown Church	Church	PM25 24 hr	30	21	2035	0	0	0	21.5	21.4	0%	21	21	0%
J.Jenner Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.6	21.9	1%	21	21	0%
Heritage Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.7	21.9	1%	21	21	0%
St Clair Park	Parkland	PM25 24 hr	30	21	2035	0	0	0	21.8	21.7	0%	22	21	-1%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	PM25 24 hr	30	21	2035	0	0	0	23.6	23	-3%	22	22	-1%
St Clair College	School	PM25 24 hr	30	21	2035	0	0	0	22.3	22	-1%	22	21	0%
Bellwood Public School	School	PM25 24 hr	30	21	2035	0	0	0	22	22.2	1%	22	22	0%
Ecole Monseigneur Jean-Noel	School	PM25 24 hr	30	21	2035	0	0	0	21.8	21.6	-1%	21	21	0%
B-Unknown Church	Church	PM25 24 hr	30	21	2035	0	0	0	22	21.6	-2%	22	21	-1%

TABLE D9A – SO_X 1 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.8	43.8	0%	32	32	0%
Mangin Cr	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.7	43.6	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox - 1 hr	690	43	2015	0	0	0	43.6	43.7	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox - 1 hr	690	43	2015	0	0	0	43.6	43.7	0%	32	32	0%
St. Cecile Academic Music - Grand Marais	School	Sox - 1 hr	690	43	2015	0	0	0	43.5	43.4	0%	32	32	0%
Lambton - closest to ROW	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.5	43.5	0%	32	32	0%
Northway and Norfolk - middle of neighbourhood	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.4	43.5	0%	32	32	0%
Bellewood Estates	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
Lambton - 150 m from ROW	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.4	0%	32	32	0%
Bellewood Estates	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
Huron Estates	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Reddock	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
10th and Todd	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.4	0%	32	32	0%
Hearthwood - within 50 m of ROW	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.5	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Kendleton Court	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Hearthwood - within 100 m of ROW	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Villa Paradiso	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Grosvenor to Croydon	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.4	0%	32	32	0%
Alpen Rose	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
Heritage Estates	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Royal Oak Senior Home	Home	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Royal Oak Senior Home	Home	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.5	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.4	43.5	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.4	43.4	0%	32	32	0%
Association for Persons with Physical Disabilities	Special Needs	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
Armanda	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Chelsea	Residential	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.5	1%	32	32	0%
Broadway Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Ojibway Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
Malden Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Victoria Memorial Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
Sandwich First Baptist	Church	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
A-Unknown Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.1	0%	32	32	0%
Museum Land Mark	Museum	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Indian Memorial Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.6	43.6	0%	32	32	0%
Bellwood Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.4	0%	32	32	0%
Beals Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Oakwood Public School	School	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Oakwood Bible Chapel	Church	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
C-Unknown Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
Our Lady Of Mount Caramel Separate School	School	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
Our Lady Of Mount Caramel Catholic Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Veteren Memorial Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
St Charbel Maronite Catholic Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
1- Unknown - Park & Golf Course	Golf Course	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
St Stevens cemetery	Cemetery	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
St Stevens Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.3	1%	32	32	0%
Sikh Cultural Society	Centre	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.3	0%	32	32	0%
Apostolic Christ Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
Heavenly Rest Cemetery	Cemetery	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
St. Nicholas Macedonian Easter	Church	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
D-Unknown Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
J.Jenner Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
Heritage Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
St Clair Park	Parkland	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.3	0%	32	32	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.3	0%	32	32	0%
St Clair College	School	Sox - 1 hr	690	43	2015	0	0	0	43.1	43.2	0%	32	32	0%
Bellwood Public School	School	Sox - 1 hr	690	43	2015	0	0	0	43.3	43.4	0%	32	32	0%
Ecole Monseigneur Jean-Noel	School	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
B-Unknown Church	Church	Sox - 1 hr	690	43	2015	0	0	0	43.2	43.2	0%	32	32	0%

TABLE D9B – SO_X 1 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.9	43.9	0%	32	32	0%
Mangin Cr	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.8	43.7	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox - 1 hr	690	43	2025	0	0	0	43.7	43.8	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox - 1 hr	690	43	2025	0	0	0	43.7	43.8	0%	32	32	0%
St. Cecile Academic Music - Grand Marais	School	Sox - 1 hr	690	43	2025	0	0	0	43.5	43.5	0%	32	32	0%
Lambton - closest to ROW	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.5	43.6	0%	32	32	0%
Northway and Norfolk - middle of neighbourhood	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.5	43.5	0%	32	32	0%
Bellewood Estates	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.4	43.4	0%	32	32	0%
Lambton - 150 m from ROW	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.4	0%	32	32	0%
Bellewood Estates	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.3	0%	32	32	0%
Huron Estates	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.3	0%	32	32	0%
Reddock	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
10th and Todd	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.5	0%	32	32	0%
Hearthwood - within 50 m of ROW	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.6	1%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Kendleton Court	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.4	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Hearthwood - within 100 m of ROW	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Villa Paradiso	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Grosvenor to Croydon	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.4	1%	32	32	0%
Alpen Rose	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Heritage Estates	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Royal Oak Senior Home	Home	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Royal Oak Senior Home	Home	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.3	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.4	43.6	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.5	43.6	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.4	43.4	0%	32	32	0%
Association for Persons with Physical Disabilities	Special Needs	Sox - 1 hr	690	43	2025	0	0	0	43.4	43.4	0%	32	32	0%
Armanda	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Chelsea	Residential	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.6	1%	32	32	0%
Broadway Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.4	0%	32	32	0%
Ojibway Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
Malden Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Victoria Memorial Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
Sandwich First Baptist	Church	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
A-Unknown Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Museum Land Mark	Museum	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Indian Memorial Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.7	43.7	0%	32	32	0%
Bellwood Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.5	0%	32	32	0%
Beals Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Oakwood Public School	School	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.3	0%	32	32	0%
Oakwood Bible Chapel	Church	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.4	0%	32	32	0%
C-Unknown Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.4	43.4	0%	32	32	0%
Our Lady Of Mount Caramel Separate School	School	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
Our Lady Of Mount Caramel Catholic Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Veteren Memorial Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
St Charbel Maronite Catholic Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.4	0%	32	32	0%
1- Unknown - Park & Golf Course	Golf Course	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
St Stevens cemetery	Cemetery	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.3	0%	32	32	0%
St Stevens Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.4	1%	32	32	0%
Sikh Cultural Society	Centre	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.3	0%	32	32	0%
Apostolic Christ Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.3	0%	32	32	0%
Heavenly Rest Cemetery	Cemetery	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
St. Nicholas Macedonian Easter	Church	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.3	0%	32	32	0%
D-Unknown Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.3	0%	32	32	0%
J.Jenner Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.3	0%	32	32	0%
Heritage Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
St Clair Park	Parkland	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.4	0%	32	32	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.3	0%	32	32	0%
St Clair College	School	Sox - 1 hr	690	43	2025	0	0	0	43.1	43.2	0%	32	32	0%
Bellwood Public School	School	Sox - 1 hr	690	43	2025	0	0	0	43.3	43.5	0%	32	32	0%
Ecole Monseigneur Jean-Noel	School	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
B-Unknown Church	Church	Sox - 1 hr	690	43	2025	0	0	0	43.2	43.2	0%	32	32	0%

TABLE D9C – SO_X 1 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.9	44.1	0%	32	32	0%
Mangin Cr	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.8	43.8	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox - 1 hr	690	43	2035	0	0	0	43.7	43.9	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox - 1 hr	690	43	2035	0	0	0	43.8	43.9	0%	32	32	0%
St. Cecile Academic Music - Grand Marais	School	Sox - 1 hr	690	43	2035	0	0	0	43.5	43.6	0%	32	32	0%
Lambton - closest to ROW	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.5	43.7	0%	32	32	0%
Northway and Norfolk - middle of neighbourhood	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.5	43.6	0%	32	32	0%
Bellewood Estates	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.5	0%	32	32	0%
Lambton - 150 m from ROW	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.5	0%	32	32	0%
Bellewood Estates	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
Huron Estates	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
Reddock	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
10th and Todd	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.5	0%	32	32	0%
Hearthwood - within 50 m of ROW	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.6	1%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Kendleton Court	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Villa Borghese	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Hearthwood - within 100 m of ROW	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Villa Paradiso	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Grosvenor to Croydon	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.5	1%	32	32	0%
Alpen Rose	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Heritage Estates	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Royal Oak Senior Home	Home	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
Royal Oak Senior Home	Home	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.7	1%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.5	43.7	0%	32	32	0%
Spring Garden	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.5	0%	32	32	0%
Association for Persons with Physical Disabilities	Special Needs	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.4	0%	32	32	0%
Armanda	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Chelsea	Residential	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.7	1%	32	32	0%
Broadway Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.5	1%	32	32	0%
Ojibway Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Malden Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.4	0%	32	32	0%
Victoria Memorial Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.2	0%	32	32	0%
Sandwich First Baptist	Church	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
A-Unknown Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Museum Land Mark	Museum	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Indian Memorial Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.7	43.8	0%	32	32	0%
Bellwood Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.6	1%	32	32	0%
Beals Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Oakwood Public School	School	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.3	0%	32	32	0%
Oakwood Bible Chapel	Church	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.4	0%	32	32	0%
C-Unknown Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.4	43.4	0%	32	32	0%
Our Lady Of Mount Caramel Separate School	School	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Our Lady Of Mount Caramel Catholic Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
Veteren Memorial Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.2	0%	32	32	0%
St Charbel Maronite Catholic Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
1- Unknown - Park & Golf Course	Golf Course	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.2	0%	32	32	0%
St Stevens cemetery	Cemetery	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.3	0%	32	32	0%
St Stevens Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.4	1%	32	32	0%
Sikh Cultural Society	Centre	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.4	0%	32	32	0%
Apostolic Christ Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.3	0%	32	32	0%
Heavenly Rest Cemetery	Cemetery	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.3	0%	32	32	0%
St. Nicholas Macedonian Easter	Church	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.3	0%	32	32	0%
D-Unknown Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
J.Jenner Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.3	0%	32	32	0%
Heritage Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
St Clair Park	Parkland	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.4	0%	32	32	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%
St Clair College	School	Sox - 1 hr	690	43	2035	0	0	0	43.1	43.2	0%	32	32	0%
Bellwood Public School	School	Sox - 1 hr	690	43	2035	0	0	0	43.3	43.6	1%	32	32	0%
Ecole Monseigneur Jean-Noel	School	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
B-Unknown Church	Church	Sox - 1 hr	690	43	2035	0	0	0	43.2	43.3	0%	32	32	0%

TABLE D10A – SO_X 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Sox 24 hr	275	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Mangin Cr	Residential	Sox 24 hr	275	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
St. Cecile Academic Music - Grand Marais	School	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Lambton - closest to ROW	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Northway and Norfolk - middle of neighbourhood	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Bellewood Estates	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Lambton - 150 m from ROW	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Bellewood Estates	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Huron Estates	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Reddock	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
10th and Todd	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Hearthwood - within 50 m of ROW	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Kendleton Court	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Hearthwood - within 100 m of ROW	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Villa Paradiso	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Grosvenor to Croydon	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Alpen Rose	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Heritage Estates	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Royal Oak Senior Home	Home	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Royal Oak Senior Home	Home	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Association for Persons with Physical Disabilities	Special Needs	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Armanda	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Chelsea	Residential	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Broadway Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Ojibway Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Malden Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Victoria Memorial Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Sandwich First Baptist	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
A-Unknown Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Museum Land Mark	Museum	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Indian Memorial Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.2	43.2	0%	32	32	0%
Bellwood Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Beals Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Oakwood Public School	School	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Oakwood Bible Chapel	Church	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
C-Unknown Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Our Lady Of Mount Caramel Separate School	School	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Our Lady Of Mount Caramel Catholic Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Veteren Memorial Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
St Charbel Maronite Catholic Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
1- Unknown - Park & Golf Course	Golf Course	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
St Stevens cemetery	Cemetery	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
St Stevens Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Sikh Cultural Society	Centre	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Apostolic Christ Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Heavenly Rest Cemetery	Cemetery	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
St. Nicholas Macedonian Easter	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
D-Unknown Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
J.Jenner Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Heritage Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
St Clair Park	Parkland	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
St Clair College	School	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
Bellwood Public School	School	Sox 24 hr	275	43	2015	0	0	0	43.1	43.1	0%	32	32	0%
Ecole Monseigneur Jean-Noel	School	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%
B-Unknown Church	Church	Sox 24 hr	275	43	2015	0	0	0	43.0	43.0	0%	32	32	0%

TABLE D10B – SO_X 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Sox 24 hr	275	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Mangin Cr	Residential	Sox 24 hr	275	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox 24 hr	275	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox 24 hr	275	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
St. Cecile Academic Music - Grand Marais	School	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Lambton - closest to ROW	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Northway and Norfolk - middle of neighbourhood	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Bellewood Estates	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Lambton - 150 m from ROW	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Bellewood Estates	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Huron Estates	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Reddock	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
10th and Todd	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Hearthwood - within 50 m of ROW	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Kendleton Court	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Hearthwood - within 100 m of ROW	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Villa Paradiso	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Grosvenor to Croydon	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Alpen Rose	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Heritage Estates	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Royal Oak Senior Home	Home	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Royal Oak Senior Home	Home	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Association for Persons with Physical Disabilities	Special Needs	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Armanda	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Chelsea	Residential	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Broadway Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Ojibway Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Malden Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Victoria Memorial Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Sandwich First Baptist	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
A-Unknown Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Museum Land Mark	Museum	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Indian Memorial Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.2	43.2	0%	32	32	0%
Bellwood Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Beals Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Oakwood Public School	School	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Oakwood Bible Chapel	Church	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
C-Unknown Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Our Lady Of Mount Caramel Separate School	School	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Our Lady Of Mount Caramel Catholic Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Veteren Memorial Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
St Charbel Maronite Catholic Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
1- Unknown - Park & Golf Course	Golf Course	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
St Stevens cemetery	Cemetery	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
St Stevens Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Sikh Cultural Society	Centre	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Apostolic Christ Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Heavenly Rest Cemetery	Cemetery	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
St. Nicholas Macedonian Easter	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
D-Unknown Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
J.Jenner Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Heritage Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
St Clair Park	Parkland	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
St Clair College	School	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
Bellwood Public School	School	Sox 24 hr	275	43	2025	0	0	0	43.1	43.1	0%	32	32	0%
Ecole Monseigneur Jean-Noel	School	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%
B-Unknown Church	Church	Sox 24 hr	275	43	2025	0	0	0	43.0	43.0	0%	32	32	0%

TABLE D10C – SO_X 24 HR MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	Sox 24 hr	275	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Mangin Cr	Residential	Sox 24 hr	275	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox 24 hr	275	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Northway and Norfolk - closest to ROW	Norfolk	Sox 24 hr	275	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
St. Cecile Academic Music - Grand Marais	School	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Lambton - closest to ROW	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Northway and Norfolk - middle of neighbourhood	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Bellewood Estates	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Lambton - 150 m from ROW	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Bellewood Estates	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Huron Estates	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Reddock	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
10th and Todd	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Hearthwood - within 50 m of ROW	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Kendleton Court	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Villa Borghese	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Hearthwood - within 100 m of ROW	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Villa Paradiso	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Grosvenor to Croydon	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Alpen Rose	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Heritage Estates	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Royal Oak Senior Home	Home	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Royal Oak Senior Home	Home	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Spring Garden	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Association for Persons with Physical Disabilities	Special Needs	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Armanda	Residential	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Chelsea	Residential	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Broadway Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Ojibway Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Malden Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Victoria Memorial Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Sandwich First Baptist	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
A-Unknown Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Museum Land Mark	Museum	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Indian Memorial Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.2	43.2	0%	32	32	0%
Bellwood Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Beals Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Oakwood Public School	School	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Oakwood Bible Chapel	Church	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
C-Unknown Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Our Lady Of Mount Caramel Separate School	School	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Our Lady Of Mount Caramel Catholic Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Veteren Memorial Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
St Charbel Maronite Catholic Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
1- Unknown - Park & Golf Course	Golf Course	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
St Stevens cemetery	Cemetery	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
St Stevens Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Sikh Cultural Society	Centre	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Apostolic Christ Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Heavenly Rest Cemetery	Cemetery	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
St. Nicholas Macedonian Easter	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
D-Unknown Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
J.Jenner Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Heritage Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
St Clair Park	Parkland	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
St Clair College	School	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
Bellwood Public School	School	Sox 24 hr	275	43	2035	0	0	0	43.1	43.1	0%	32	32	0%
Ecole Monseigneur Jean-Noel	School	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%
B-Unknown Church	Church	Sox 24 hr	275	43	2035	0	0	0	43.0	43.0	0%	32	32	0%

TABLE D11A – VOC MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	VOC 24 hr		147	2015			0	154.7	153.9	-1%	151	152	0%
Mangin Cr	Residential	VOC 24 hr		147	2015			0	153.4	153.8	0%	151	151	0%
Northway and Norfolk - closest to ROW	Norfolk	VOC 24 hr		147	2015			0	153	151.9	-1%	150	150	0%
Northway and Norfolk - closest to ROW	Norfolk	VOC 24 hr		147	2015			0	152.9	152.2	0%	150	150	0%
St. Cecile Academic Music - Grand Marais	School	VOC 24 hr		147	2015			0	152.5	151.9	0%	150	150	0%
Lambton - closest to ROW	Residential	VOC 24 hr		147	2015			0	150.6	150.8	0%	149	149	0%
Northway and Norfolk - middle of neighbourhood	Residential	VOC 24 hr		147	2015			0	151.5	150.3	-1%	149	149	0%
Bellewood Estates	Residential	VOC 24 hr		147	2015			0	150	149.8	0%	149	148	0%
Lambton - 150 m from ROW	Residential	VOC 24 hr		147	2015			0	149.6	149.1	0%	149	148	0%
Bellewood Estates	Residential	VOC 24 hr		147	2015			0	149	149	0%	148	148	0%
Huron Estates	Residential	VOC 24 hr		147	2015			0	149.1	148.4	0%	148	148	0%
Reddock	Residential	VOC 24 hr		147	2015			0	148.7	148.5	0%	148	148	0%
10th and Todd	Residential	VOC 24 hr		147	2015			0	149.5	149.8	0%	148	148	0%
Hearthwood - within 50 m of ROW	Residential	VOC 24 hr		147	2015			0	149.8	151.5	1%	149	150	1%
Villa Borghese	Residential	VOC 24 hr		147	2015			0	149.2	149.6	0%	148	148	0%
Kendleton Court	Residential	VOC 24 hr		147	2015			0	149.7	149.9	0%	149	149	0%
Villa Borghese	Residential	VOC 24 hr		147	2015			0	148.6	148.8	0%	148	148	0%
Villa Borghese	Residential	VOC 24 hr		147	2015			0	149	149.1	0%	148	148	0%
Hearthwood - within 100 m of ROW	Residential	VOC 24 hr		147	2015			0	148.4	148.3	0%	148	148	0%
Villa Paradiso	Residential	VOC 24 hr		147	2015			0	148.4	148.8	0%	148	148	0%
Grosvenor to Croydon	Residential	VOC 24 hr		147	2015			0	148.7	149.9	1%	148	148	0%
Alpen Rose	Residential	VOC 24 hr		147	2015			0	148.6	149	0%	148	148	0%
Heritage Estates	Residential	VOC 24 hr		147	2015			0	147.8	148	0%	147	147	0%
Royal Oak Senior Home	Home	VOC 24 hr		147	2015			0	148	148	0%	148	147	0%
Royal Oak Senior Home	Home	VOC 24 hr		147	2015			0	148.1	147.9	0%	148	147	0%
Spring Garden	Residential	VOC 24 hr		147	2015			0	149.1	149.9	1%	148	148	0%
Spring Garden	Residential	VOC 24 hr		147	2015			0	149.5	149.7	0%	148	148	0%
Spring Garden	Residential	VOC 24 hr		147	2015			0	149.7	150.2	0%	148	149	0%
Association for Persons with Physical Disabilities	Special Needs	VOC 24 hr		147	2015			0	148.9	149.3	0%	148	148	0%
Armanda	Residential	VOC 24 hr		147	2015			0	148.2	148.8	0%	148	148	0%
Chelsea	Residential	VOC 24 hr		147	2015			0	149.3	150.4	1%	148	149	0%
Broadway Park	Parkland	VOC 24 hr		147	2015			0	148	148.6	0%	147	148	0%
Ojibway Park	Parkland	VOC 24 hr		147	2015			0	147.4	147.5	0%	147	147	0%
Malden Park	Parkland	VOC 24 hr		147	2015			0	148.4	149.1	0%	148	148	0%
Victoria Memorial Park	Parkland	VOC 24 hr		147	2015			0	147.2	148.1	1%	147	147	0%
Sandwich First Baptist	Church	VOC 24 hr		147	2015			0	148.2	147.4	-1%	148	147	0%
A-Unknown Church	Church	VOC 24 hr		147	2015			0	148.6	147.4	-1%	148	147	0%
Museum Land Mark	Museum	VOC 24 hr		147	2015			0	148.2	147.4	-1%	148	147	0%
Indian Memorial Park	Parkland	VOC 24 hr		147	2015			0	156.7	156	0%	152	152	0%
Bellwood Park	Parkland	VOC 24 hr		147	2015			0	149.4	149.6	0%	148	148	0%
Beals Park	Parkland	VOC 24 hr		147	2015			0	148.6	148.2	0%	148	148	0%
Oakwood Public School	School	VOC 24 hr		147	2015			0	149.6	148.6	-1%	148	148	-1%
Oakwood Bible Chapel	Church	VOC 24 hr		147	2015			0	151.2	149.4	-1%	150	148	-1%
C-Unknown Church	Church	VOC 24 hr		147	2015			0	152.7	150.3	-2%	150	149	-1%
Our Lady Of Mount Caramel Separate School	School	VOC 24 hr		147	2015			0	149.6	148.7	-1%	149	148	0%
Our Lady Of Mount Caramel Catholic Church	Church	VOC 24 hr		147	2015			0	149.3	148.2	-1%	148	148	0%
Veteren Memorial Park	Parkland	VOC 24 hr		147	2015			0	148.1	147.9	0%	148	147	0%
St Charbel Maronite Catholic Church	Church	VOC 24 hr		147	2015			0	148.3	148.5	0%	147	148	0%
1- Unknown - Park & Golf Course	Golf Course	VOC 24 hr		147	2015			0	147.3	147.5	0%	147	147	0%
St Stevens cemetery	Cemetery	VOC 24 hr		147	2015			0	147.3	148.6	1%	147	148	0%
St Stevens Church	Church	VOC 24 hr		147	2015			0	147.3	150	2%	147	148	1%
Sikh Cultural Society	Centre	VOC 24 hr		147	2015			0	147.8	150.5	2%	148	149	1%
Apostolic Christ Church	Church	VOC 24 hr		147	2015			0	147.7	149.8	1%	147	148	1%
Heavenly Rest Cemetery	Cemetery	VOC 24 hr		147	2015			0	147.5	148.2	0%	147	148	0%
St. Nicholas Macedonian Easter	Church	VOC 24 hr		147	2015			0	147.7	149.7	1%	147	148	1%
D-Unknown Church	Church	VOC 24 hr		147	2015			0	147.8	149.1	1%	147	148	1%
J.Jenner Park	Parkland	VOC 24 hr		147	2015			0	148.1	148.7	0%	148	148	0%
Heritage Park	Parkland	VOC 24 hr		147	2015			0	147.9	148.1	0%	147	147	0%
St Clair Park	Parkland	VOC 24 hr		147	2015			0	147.9	148.1	0%	147	148	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	VOC 24 hr		147	2015			0	149.3	149.2	0%	148	148	0%
St Clair College	School	VOC 24 hr		147	2015			0	148.3	148.1	0%	148	148	0%
Bellwood Public School	School	VOC 24 hr		147	2015			0	149.2	149.5	0%	148	148	0%
Ecole Monseigneur Jean-Noel	School	VOC 24 hr		147	2015			0	148.3	148	0%	148	147	0%
B-Unknown Church	Church	VOC 24 hr		147	2015			0	148.8	148.3	0%	148	148	0%

TABLE D11B – VOC MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	VOC 24 hr		147	2025			0	156	154.8	-1%	151	151	0%
Mangin Cr	Residential	VOC 24 hr		147	2025			0	154.5	154.4	0%	150	151	0%
Northway and Norfolk - closest to ROW	Norfolk	VOC 24 hr		147	2025			0	153.9	152.2	-1%	150	150	0%
Northway and Norfolk - closest to ROW	Norfolk	VOC 24 hr		147	2025			0	153.7	152.7	-1%	150	150	0%
St. Cecile Academic Music - Grand Marais	School	VOC 24 hr		147	2025			0	151.7	151.5	0%	150	149	0%
Lambton - closest to ROW	Residential	VOC 24 hr		147	2025			0	150.2	150.5	0%	149	149	0%
Northway and Norfolk - middle of neighbourhood	Residential	VOC 24 hr		147	2025			0	150.8	150	-1%	149	149	0%
Bellewood Estates	Residential	VOC 24 hr		147	2025			0	149.5	149.6	0%	148	148	0%
Lambton - 150 m from ROW	Residential	VOC 24 hr		147	2025			0	149.2	149	0%	148	148	0%
Bellewood Estates	Residential	VOC 24 hr		147	2025			0	148.8	148.7	0%	148	148	0%
Huron Estates	Residential	VOC 24 hr		147	2025			0	148.8	148.4	0%	148	148	0%
Reddock	Residential	VOC 24 hr		147	2025			0	148.4	148.4	0%	148	148	0%
10th and Todd	Residential	VOC 24 hr		147	2025			0	149.2	149.5	0%	148	148	0%
Hearthwood - within 50 m of ROW	Residential	VOC 24 hr		147	2025			0	149.4	150.8	1%	148	149	1%
Villa Borghese	Residential	VOC 24 hr		147	2025			0	148.8	149.5	0%	148	148	0%
Kendleton Court	Residential	VOC 24 hr		147	2025			0	149.2	149.6	0%	148	149	0%
Villa Borghese	Residential	VOC 24 hr		147	2025			0	148.3	148.7	0%	148	148	0%
Villa Borghese	Residential	VOC 24 hr		147	2025			0	148.8	149	0%	148	148	0%
Hearthwood - within 100 m of ROW	Residential	VOC 24 hr		147	2025			0	148.1	148.1	0%	148	148	0%
Villa Paradiso	Residential	VOC 24 hr		147	2025			0	148.2	148.7	0%	148	148	0%
Grosvenor to Croydon	Residential	VOC 24 hr		147	2025			0	148.4	149.6	1%	148	148	0%
Alpen Rose	Residential	VOC 24 hr		147	2025			0	148.3	148.7	0%	148	148	0%
Heritage Estates	Residential	VOC 24 hr		147	2025			0	147.6	147.8	0%	147	147	0%
Royal Oak Senior Home	Home	VOC 24 hr		147	2025			0	147.9	147.9	0%	147	147	0%
Royal Oak Senior Home	Home	VOC 24 hr		147	2025			0	148	147.8	0%	147	147	0%
Spring Garden	Residential	VOC 24 hr		147	2025			0	148.8	149.7	1%	148	148	0%
Spring Garden	Residential	VOC 24 hr		147	2025			0	149.1	149.5	0%	148	148	0%
Spring Garden	Residential	VOC 24 hr		147	2025			0	149.4	149.8	0%	148	148	0%
Association for Persons with Physical Disabilities	Special Needs	VOC 24 hr		147	2025			0	148.7	149.1	0%	148	148	0%
Armanda	Residential	VOC 24 hr		147	2025			0	148	148.6	0%	147	148	0%
Chelsea	Residential	VOC 24 hr		147	2025			0	149	150	1%	148	148	0%
Broadway Park	Parkland	VOC 24 hr		147	2025			0	147.8	148.4	0%	147	148	0%
Ojibway Park	Parkland	VOC 24 hr		147	2025			0	147.3	147.5	0%	147	147	0%
Malden Park	Parkland	VOC 24 hr		147	2025			0	148.2	149	1%	148	148	0%
Victoria Memorial Park	Parkland	VOC 24 hr		147	2025			0	147.1	147.9	1%	147	147	0%
Sandwich First Baptist	Church	VOC 24 hr		147	2025			0	148	147.3	0%	148	147	0%
A-Unknown Church	Church	VOC 24 hr		147	2025			0	148.4	147.4	-1%	148	147	0%
Museum Land Mark	Museum	VOC 24 hr		147	2025			0	148.1	147.3	-1%	148	147	0%
Indian Memorial Park	Parkland	VOC 24 hr		147	2025			0	155.2	155.5	0%	151	151	0%
Bellwood Park	Parkland	VOC 24 hr		147	2025			0	149	149.3	0%	148	148	0%
Beals Park	Parkland	VOC 24 hr		147	2025			0	148.4	148	0%	148	147	0%
Oakwood Public School	School	VOC 24 hr		147	2025			0	149.1	148.4	0%	148	148	0%
Oakwood Bible Chapel	Church	VOC 24 hr		147	2025			0	150.7	149.2	-1%	149	148	-1%
C-Unknown Church	Church	VOC 24 hr		147	2025			0	151.9	150	-1%	150	149	-1%
Our Lady Of Mount Caramel Separate School	School	VOC 24 hr		147	2025			0	149.1	148.5	0%	148	148	0%
Our Lady Of Mount Caramel Catholic Church	Church	VOC 24 hr		147	2025			0	148.9	148.1	-1%	148	148	0%
Veteren Memorial Park	Parkland	VOC 24 hr		147	2025			0	147.9	147.8	0%	147	147	0%
St Charbel Maronite Catholic Church	Church	VOC 24 hr		147	2025			0	147.9	148.4	0%	147	148	0%
1- Unknown - Park & Golf Course	Golf Course	VOC 24 hr		147	2025			0	147.2	147.5	0%	147	147	0%
St Stevens cemetery	Cemetery	VOC 24 hr		147	2025			0	147.2	148.4	1%	147	148	0%
St Stevens Church	Church	VOC 24 hr		147	2025			0	147.2	149.6	2%	147	148	1%
Sikh Cultural Society	Centre	VOC 24 hr		147	2025			0	147.7	150.2	2%	147	149	1%
Apostolic Christ Church	Church	VOC 24 hr		147	2025			0	147.6	149.5	1%	147	148	1%
Heavenly Rest Cemetery	Cemetery	VOC 24 hr		147	2025			0	147.4	148.1	0%	147	147	0%
St. Nicholas Macedonian Easter	Church	VOC 24 hr		147	2025			0	147.6	149.4	1%	147	148	1%
D-Unknown Church	Church	VOC 24 hr		147	2025			0	147.7	148.9	1%	147	148	1%
J.Jenner Park	Parkland	VOC 24 hr		147	2025			0	147.9	148.5	0%	148	148	0%
Heritage Park	Parkland	VOC 24 hr		147	2025			0	147.7	148	0%	147	147	0%
St Clair Park	Parkland	VOC 24 hr		147	2025			0	147.7	148	0%	147	147	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	VOC 24 hr		147	2025			0	148.9	149	0%	148	148	0%
St Clair College	School	VOC 24 hr		147	2025			0	148.1	148	0%	147	147	0%
Bellwood Public School	School	VOC 24 hr		147	2025			0	148.9	149.2	0%	148	148	0%
Ecole Monseigneur Jean-Noel	School	VOC 24 hr		147	2025			0	148.1	148	0%	148	147	0%
B-Unknown Church	Church	VOC 24 hr		147	2025			0	148.6	148.1	0%	148	147	0%

TABLE D11C – VOC MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	VOC 24 hr		147	2035			0	155	154.5	0%	151	151	0%
Mangin Cr	Residential	VOC 24 hr		147	2035			0	153.8	154.5	0%	151	151	0%
Northway and Norfolk - closest to ROW	Norfolk	VOC 24 hr		147	2035			0	153.4	152.3	-1%	150	150	0%
Northway and Norfolk - closest to ROW	Norfolk	VOC 24 hr		147	2035			0	153.1	152.7	0%	150	150	0%
St. Cecile Academic Music - Grand Marais	School	VOC 24 hr		147	2035			0	151.9	151.9	0%	150	150	0%
Lambton - closest to ROW	Residential	VOC 24 hr		147	2035			0	150.3	150.9	0%	149	149	0%
Northway and Norfolk - middle of neighbourhood	Residential	VOC 24 hr		147	2035			0	151.1	150.3	-1%	149	149	0%
Bellewood Estates	Residential	VOC 24 hr		147	2035			0	149.7	149.8	0%	148	148	0%
Lambton - 150 m from ROW	Residential	VOC 24 hr		147	2035			0	149.3	149.2	0%	148	148	0%
Bellewood Estates	Residential	VOC 24 hr		147	2035			0	148.9	149	0%	148	148	0%
Huron Estates	Residential	VOC 24 hr		147	2035			0	148.9	148.6	0%	148	148	0%
Reddock	Residential	VOC 24 hr		147	2035			0	148.5	148.7	0%	148	148	0%
10th and Todd	Residential	VOC 24 hr		147	2035			0	149.3	149.9	0%	148	148	0%
Hearthwood - within 50 m of ROW	Residential	VOC 24 hr		147	2035			0	149.4	151.1	1%	148	149	1%
Villa Borghese	Residential	VOC 24 hr		147	2035			0	148.9	149.5	0%	148	148	0%
Kendleton Court	Residential	VOC 24 hr		147	2035			0	149.3	149.8	0%	148	149	0%
Villa Borghese	Residential	VOC 24 hr		147	2035			0	148.3	148.8	0%	148	148	0%
Villa Borghese	Residential	VOC 24 hr		147	2035			0	148.9	149	0%	148	148	0%
Hearthwood - within 100 m of ROW	Residential	VOC 24 hr		147	2035			0	148.2	148.3	0%	148	148	0%
Villa Paradiso	Residential	VOC 24 hr		147	2035			0	148.2	148.8	0%	148	148	0%
Grosvenor to Croydon	Residential	VOC 24 hr		147	2035			0	148.4	149.9	1%	148	148	0%
Alpen Rose	Residential	VOC 24 hr		147	2035			0	148.4	148.8	0%	148	148	0%
Heritage Estates	Residential	VOC 24 hr		147	2035			0	147.7	147.9	0%	147	147	0%
Royal Oak Senior Home	Home	VOC 24 hr		147	2035			0	147.9	148	0%	148	147	0%
Royal Oak Senior Home	Home	VOC 24 hr		147	2035			0	148	148	0%	147	147	0%
Spring Garden	Residential	VOC 24 hr		147	2035			0	148.9	149.9	1%	148	149	0%
Spring Garden	Residential	VOC 24 hr		147	2035			0	149.2	149.8	0%	148	149	0%
Spring Garden	Residential	VOC 24 hr		147	2035			0	149.5	150.2	0%	148	149	0%
Association for Persons with Physical Disabilities	Special Needs	VOC 24 hr		147	2035			0	148.8	149.4	0%	148	148	0%
Armanda	Residential	VOC 24 hr		147	2035			0	148.1	148.9	1%	147	148	0%
Chelsea	Residential	VOC 24 hr		147	2035			0	149	150.3	1%	148	148	0%
Broadway Park	Parkland	VOC 24 hr		147	2035			0	147.8	148.6	1%	147	148	0%
Ojibway Park	Parkland	VOC 24 hr		147	2035			0	147.3	147.6	0%	147	147	0%
Malden Park	Parkland	VOC 24 hr		147	2035			0	148.3	149.4	1%	148	148	0%
Victoria Memorial Park	Parkland	VOC 24 hr		147	2035			0	147.1	148.1	1%	147	147	0%
Sandwich First Baptist	Church	VOC 24 hr		147	2035			0	148.1	147.4	0%	148	147	0%
A-Unknown Church	Church	VOC 24 hr		147	2035			0	148.5	147.4	-1%	148	147	0%
Museum Land Mark	Museum	VOC 24 hr		147	2035			0	148.1	147.4	0%	148	147	0%
Indian Memorial Park	Parkland	VOC 24 hr		147	2035			0	155.5	156.1	0%	151	152	0%
Bellwood Park	Parkland	VOC 24 hr		147	2035			0	149.1	149.6	0%	148	148	0%
Beals Park	Parkland	VOC 24 hr		147	2035			0	148.5	148.2	0%	148	148	0%
Oakwood Public School	School	VOC 24 hr		147	2035			0	149.3	148.7	0%	148	148	0%
Oakwood Bible Chapel	Church	VOC 24 hr		147	2035			0	151.1	149.5	-1%	149	149	-1%
C-Unknown Church	Church	VOC 24 hr		147	2035			0	152.2	150.5	-1%	150	149	-1%
Our Lady Of Mount Caramel Separate School	School	VOC 24 hr		147	2035			0	149.2	148.7	0%	148	148	0%
Our Lady Of Mount Caramel Catholic Church	Church	VOC 24 hr		147	2035			0	149	148.2	-1%	148	148	0%
Veteren Memorial Park	Parkland	VOC 24 hr		147	2035			0	148	147.9	0%	147	147	0%
St Charbel Maronite Catholic Church	Church	VOC 24 hr		147	2035			0	148	148.5	0%	147	148	0%
1- Unknown - Park & Golf Course	Golf Course	VOC 24 hr		147	2035			0	147.2	147.6	0%	147	147	0%
St Stevens cemetery	Cemetery	VOC 24 hr		147	2035			0	147.2	148.5	1%	147	148	0%
St Stevens Church	Church	VOC 24 hr		147	2035			0	147.3	149.8	2%	147	148	1%
Sikh Cultural Society	Centre	VOC 24 hr		147	2035			0	147.7	150.4	2%	147	149	1%
Apostolic Christ Church	Church	VOC 24 hr		147	2035			0	147.6	149.7	1%	147	148	1%
Heavenly Rest Cemetery	Cemetery	VOC 24 hr		147	2035			0	147.5	148.2	0%	147	148	0%
St. Nicholas Macedonian Easter	Church	VOC 24 hr		147	2035			0	147.6	149.6	1%	147	148	1%
D-Unknown Church	Church	VOC 24 hr		147	2035			0	147.7	149	1%	147	148	1%
J.Jenner Park	Parkland	VOC 24 hr		147	2035			0	148	148.6	0%	148	148	0%
Heritage Park	Parkland	VOC 24 hr		147	2035			0	147.8	148	0%	147	147	0%
St Clair Park	Parkland	VOC 24 hr		147	2035			0	147.8	148.1	0%	147	147	0%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	VOC 24 hr		147	2035			0	149	149.2	0%	148	148	0%
St Clair College	School	VOC 24 hr		147	2035			0	148.1	148.1	0%	147	148	0%
Bellwood Public School	School	VOC 24 hr		147	2035			0	149	149.4	0%	148	148	0%
Ecole Monseigneur Jean-Noel	School	VOC 24 hr		147	2035			0	148.2	148	0%	148	147	0%
B-Unknown Church	Church	VOC 24 hr		147	2035			0	148.7	148.3	0%	148	148	0%

TABLE D12A – NO_X MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2015

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	NOx 1 hr	400	64	2015	0	0	0	230	162	-29%	91	81	-10%
Mangin Cr	Residential	NOx 1 hr	400	64	2015	0	0	0	226	148	-35%	90	81	-9%
Northway and Norfolk - closest to ROW	Norfolk	NOx 1 hr	400	64	2015	0	0	0	221	154	-30%	87	79	-8%
Northway and Norfolk - closest to ROW	Norfolk	NOx 1 hr	400	64	2015	0	0	0	231	156	-33%	86	79	-7%
St. Cecile Academic Music - Grand Marais	School	NOx 1 hr	400	64	2015	0	0	0	172	124	-28%	85	75	-11%
Lambton - closest to ROW	Residential	NOx 1 hr	400	64	2015	0	0	0	173	138	-20%	79	76	-4%
Northway and Norfolk - middle of neighbourhood	Residential	NOx 1 hr	400	64	2015	0	0	0	170	125	-26%	80	74	-8%
Bellewood Estates	Residential	NOx 1 hr	400	64	2015	0	0	0	134	111	-17%	76	71	-6%
Lambton - 150 m from ROW	Residential	NOx 1 hr	400	64	2015	0	0	0	130	118	-10%	75	71	-6%
Bellewood Estates	Residential	NOx 1 hr	400	64	2015	0	0	0	117	105	-10%	73	69	-5%
Huron Estates	Residential	NOx 1 hr	400	64	2015	0	0	0	114	105	-8%	72	69	-5%
Reddock	Residential	NOx 1 hr	400	64	2015	0	0	0	129	99	-23%	71	68	-4%
10th and Todd	Residential	NOx 1 hr	400	64	2015	0	0	0	163	113	-30%	71	68	-4%
Hearthwood - within 50 m of ROW	Residential	NOx 1 hr	400	64	2015	0	0	0	129	142	10%	75	75	-1%
Villa Borghese	Residential	NOx 1 hr	400	64	2015	0	0	0	119	98	-18%	73	71	-3%
Kendleton Court	Residential	NOx 1 hr	400	64	2015	0	0	0	168	114	-32%	75	75	0%
Villa Borghese	Residential	NOx 1 hr	400	64	2015	0	0	0	133	87	-34%	71	69	-3%
Villa Borghese	Residential	NOx 1 hr	400	64	2015	0	0	0	147	92	-37%	74	69	-7%
Hearthwood - within 100 m of ROW	Residential	NOx 1 hr	400	64	2015	0	0	0	143	95	-33%	69	68	-2%
Villa Paradiso	Residential	NOx 1 hr	400	64	2015	0	0	0	113	101	-10%	70	69	-1%
Grosvenor to Croydon	Residential	NOx 1 hr	400	64	2015	0	0	0	140	122	-13%	70	71	2%
Alpen Rose	Residential	NOx 1 hr	400	64	2015	0	0	0	103	92	-11%	69	69	0%
Heritage Estates	Residential	NOx 1 hr	400	64	2015	0	0	0	108	88	-18%	67	67	-1%
Royal Oak Senior Home	Home	NOx 1 hr	400	64	2015	0	0	0	131	100	-24%	69	66	-4%
Royal Oak Senior Home	Home	NOx 1 hr	400	64	2015	0	0	0	137	103	-25%	68	66	-3%
Spring Garden	Residential	NOx 1 hr	400	64	2015	0	0	0	112	127	13%	69	70	1%
Spring Garden	Residential	NOx 1 hr	400	64	2015	0	0	0	122	129	6%	70	71	1%
Spring Garden	Residential	NOx 1 hr	400	64	2015	0	0	0	126	114	-10%	72	72	-1%
Association for Persons with Physical Disabilities	Special Needs	NOx 1 hr	400	64	2015	0	0	0	113	104	-8%	70	69	-1%
Armanda	Residential	NOx 1 hr	400	64	2015	0	0	0	88	95	8%	67	68	1%
Chelsea	Residential	NOx 1 hr	400	64	2015	0	0	0	166	154	-7%	71	72	1%
Broadway Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	88	134	52%	66	70	7%
Ojibway Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	81	85	5%	66	66	0%
Malden Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	92	101	10%	68	69	2%
Victoria Memorial Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	80	87	9%	64	66	3%
Sandwich First Baptist	Church	NOx 1 hr	400	64	2015	0	0	0	85	83	-2%	67	66	-2%
A-Unknown Church	Church	NOx 1 hr	400	64	2015	0	0	0	93	82	-12%	68	66	-3%
Museum Land Mark	Museum	NOx 1 hr	400	64	2015	0	0	0	85	84	-2%	67	66	-2%
Indian Memorial Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	157	138	-12%	85	80	-6%
Bellwood Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	120	130	9%	73	70	-4%
Beals Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	111	89	-20%	71	67	-6%
Oakwood Public School	School	NOx 1 hr	400	64	2015	0	0	0	145	98	-32%	76	68	-11%
Oakwood Bible Chapel	Church	NOx 1 hr	400	64	2015	0	0	0	174	106	-39%	85	69	-18%
C-Unknown Church	Church	NOx 1 hr	400	64	2015	0	0	0	204	109	-46%	90	71	-22%
Our Lady Of Mount Caramel Separate School	School	NOx 1 hr	400	64	2015	0	0	0	121	105	-13%	73	70	-4%
Our Lady Of Mount Caramel Catholic Church	Church	NOx 1 hr	400	64	2015	0	0	0	107	95	-11%	71	69	-3%
Veteren Memorial Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	91	86	-6%	68	67	-2%
St Charbel Maronite Catholic Church	Church	NOx 1 hr	400	64	2015	0	0	0	111	113	2%	65	68	4%
1- Unknown - Park & Golf Course	Golf Course	NOx 1 hr	400	64	2015	0	0	0	86	89	4%	64	65	2%
St Stevens cemetery	Cemetery	NOx 1 hr	400	64	2015	0	0	0	82	90	10%	64	66	3%
St Stevens Church	Church	NOx 1 hr	400	64	2015	0	0	0	82	104	27%	64	68	6%
Sikh Cultural Society	Centre	NOx 1 hr	400	64	2015	0	0	0	84	95	13%	66	70	6%
Apostolic Christ Church	Church	NOx 1 hr	400	64	2015	0	0	0	84	90	7%	66	69	5%
Heavenly Rest Cemetery	Cemetery	NOx 1 hr	400	64	2015	0	0	0	85	92	7%	65	66	2%
St. Nicholas Macedonian Easter	Church	NOx 1 hr	400	64	2015	0	0	0	83	89	7%	65	69	5%
D-Unknown Church	Church	NOx 1 hr	400	64	2015	0	0	0	86	94	10%	65	68	4%
J.Jenner Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	88	95	8%	67	68	1%
Heritage Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	99	92	-7%	67	67	0%
St Clair Park	Parkland	NOx 1 hr	400	64	2015	0	0	0	127	108	-15%	68	67	-1%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	NOx 1 hr	400	64	2015	0	0	0	137	103	-25%	74	71	-4%
St Clair College	School	NOx 1 hr	400	64	2015	0	0	0	92	87	-5%	69	67	-2%
Bellwood Public School	School	NOx 1 hr	400	64	2015	0	0	0	113	126	11%	72	69	-4%
Ecole Monseigneur Jean-Noel	School	NOx 1 hr	400	64	2015	0	0	0	102	85	-17%	70	67	-4%
B-Unknown Church	Church	NOx 1 hr	400	64	2015	0	0	0	122	89	-27%	73	67	-8%

TABLE D12B – NO_X MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2025

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	NOx 1 hr	400	64	2025	0	0	0	180	107	-41%	80	73	-9%
Mangin Cr	Residential	NOx 1 hr	400	64	2025	0	0	0	192	108	-44%	80	72	-10%
Northway and Norfolk - closest to ROW	Norfolk	NOx 1 hr	400	64	2025	0	0	0	179	107	-40%	77	70	-9%
Northway and Norfolk - closest to ROW	Norfolk	NOx 1 hr	400	64	2025	0	0	0	189	108	-43%	75	70	-7%
St. Cecile Academic Music - Grand Marais	School	NOx 1 hr	400	64	2025	0	0	0	146	99	-32%	80	69	-14%
Lambton - closest to ROW	Residential	NOx 1 hr	400	64	2025	0	0	0	143	99	-31%	72	69	-5%
Northway and Norfolk - middle of neighbourhood	Residential	NOx 1 hr	400	64	2025	0	0	0	139	94	-33%	74	68	-8%
Bellewood Estates	Residential	NOx 1 hr	400	64	2025	0	0	0	111	94	-15%	72	67	-7%
Lambton - 150 m from ROW	Residential	NOx 1 hr	400	64	2025	0	0	0	109	90	-17%	72	66	-7%
Bellewood Estates	Residential	NOx 1 hr	400	64	2025	0	0	0	98	92	-6%	70	66	-6%
Huron Estates	Residential	NOx 1 hr	400	64	2025	0	0	0	98	83	-16%	69	66	-5%
Reddock	Residential	NOx 1 hr	400	64	2025	0	0	0	118	81	-32%	68	65	-4%
10th and Todd	Residential	NOx 1 hr	400	64	2025	0	0	0	150	83	-44%	69	66	-5%
Hearthwood - within 50 m of ROW	Residential	NOx 1 hr	400	64	2025	0	0	0	114	94	-17%	69	68	-1%
Villa Borghese	Residential	NOx 1 hr	400	64	2025	0	0	0	111	78	-30%	69	67	-2%
Kendleton Court	Residential	NOx 1 hr	400	64	2025	0	0	0	163	83	-49%	71	68	-4%
Villa Borghese	Residential	NOx 1 hr	400	64	2025	0	0	0	132	73	-44%	69	66	-4%
Villa Borghese	Residential	NOx 1 hr	400	64	2025	0	0	0	142	77	-46%	72	66	-8%
Hearthwood - within 100 m of ROW	Residential	NOx 1 hr	400	64	2025	0	0	0	133	77	-42%	66	65	-2%
Villa Paradiso	Residential	NOx 1 hr	400	64	2025	0	0	0	107	76	-29%	67	66	-2%
Grosvenor to Croydon	Residential	NOx 1 hr	400	64	2025	0	0	0	138	87	-37%	68	66	-2%
Alpen Rose	Residential	NOx 1 hr	400	64	2025	0	0	0	99	74	-25%	67	66	-2%
Heritage Estates	Residential	NOx 1 hr	400	64	2025	0	0	0	97	73	-25%	66	65	-1%
Royal Oak Senior Home	Home	NOx 1 hr	400	64	2025	0	0	0	122	78	-36%	67	65	-3%
Royal Oak Senior Home	Home	NOx 1 hr	400	64	2025	0	0	0	135	78	-42%	66	65	-3%
Spring Garden	Residential	NOx 1 hr	400	64	2025	0	0	0	89	92	3%	67	67	-1%
Spring Garden	Residential	NOx 1 hr	400	64	2025	0	0	0	94	92	-2%	68	67	-1%
Spring Garden	Residential	NOx 1 hr	400	64	2025	0	0	0	100	86	-14%	69	67	-3%
Association for Persons with Physical Disabilities	Special Needs	NOx 1 hr	400	64	2025	0	0	0	90	82	-9%	68	66	-2%
Armanda	Residential	NOx 1 hr	400	64	2025	0	0	0	77	94	22%	66	66	0%
Chelsea	Residential	NOx 1 hr	400	64	2025	0	0	0	157	98	-37%	68	66	-2%
Broadway Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	76	153	102%	65	67	3%
Ojibway Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	73	88	21%	65	65	0%
Malden Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	82	91	11%	66	66	0%
Victoria Memorial Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	74	72	-2%	64	65	1%
Sandwich First Baptist	Church	NOx 1 hr	400	64	2025	0	0	0	78	85	9%	65	65	-1%
A-Unknown Church	Church	NOx 1 hr	400	64	2025	0	0	0	88	86	-2%	66	65	-1%
Museum Land Mark	Museum	NOx 1 hr	400	64	2025	0	0	0	78	86	9%	65	65	-1%
Indian Memorial Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	124	102	-18%	76	72	-6%
Bellwood Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	98	101	3%	70	66	-5%
Beals Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	108	76	-29%	69	65	-6%
Oakwood Public School	School	NOx 1 hr	400	64	2025	0	0	0	142	81	-43%	74	65	-12%
Oakwood Bible Chapel	Church	NOx 1 hr	400	64	2025	0	0	0	175	83	-52%	84	66	-21%
C-Unknown Church	Church	NOx 1 hr	400	64	2025	0	0	0	200	85	-58%	89	67	-25%
Our Lady Of Mount Caramel Separate School	School	NOx 1 hr	400	64	2025	0	0	0	120	79	-34%	71	66	-6%
Our Lady Of Mount Caramel Catholic Church	Church	NOx 1 hr	400	64	2025	0	0	0	105	75	-29%	69	66	-4%
Veteren Memorial Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	89	71	-20%	67	65	-3%
St Charbel Maronite Catholic Church	Church	NOx 1 hr	400	64	2025	0	0	0	89	81	-9%	65	66	2%
1- Unknown - Park & Golf Course	Golf Course	NOx 1 hr	400	64	2025	0	0	0	77	73	-5%	64	64	1%
St Stevens cemetery	Cemetery	NOx 1 hr	400	64	2025	0	0	0	74	75	1%	64	65	1%
St Stevens Church	Church	NOx 1 hr	400	64	2025	0	0	0	74	80	8%	64	66	3%
Sikh Cultural Society	Centre	NOx 1 hr	400	64	2025	0	0	0	79	78	-1%	65	66	2%
Apostolic Christ Church	Church	NOx 1 hr	400	64	2025	0	0	0	79	75	-5%	65	66	2%
Heavenly Rest Cemetery	Cemetery	NOx 1 hr	400	64	2025	0	0	0	78	75	-4%	65	65	1%
St. Nicholas Macedonian Easter	Church	NOx 1 hr	400	64	2025	0	0	0	79	75	-5%	65	66	2%
D-Unknown Church	Church	NOx 1 hr	400	64	2025	0	0	0	78	76	-2%	65	66	2%
J.Jenner Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	84	76	-9%	66	65	-1%
Heritage Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	91	75	-17%	66	65	-1%
St Clair Park	Parkland	NOx 1 hr	400	64	2025	0	0	0	104	80	-24%	66	65	-2%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	NOx 1 hr	400	64	2025	0	0	0	124	78	-37%	70	67	-5%
St Clair College	School	NOx 1 hr	400	64	2025	0	0	0	86	72	-17%	67	65	-3%
Bellwood Public School	School	NOx 1 hr	400	64	2025	0	0	0	94	100	6%	69	66	-5%
Ecole Monseigneur Jean-Noel	School	NOx 1 hr	400	64	2025	0	0	0	99	78	-21%	68	65	-5%
B-Unknown Church	Church	NOx 1 hr	400	64	2025	0	0	0	118	76	-36%	72	65	-10%

TABLE D12C – NO_X MAXIMUM CONCENTRATIONS AT SENSITIVE RECEPTORS, 2035

RECEPTOR_NAME	Sensitive Receptor	Contaminant	Criteria, ug/m3	Background used in modelling (ug/m3)	Year	No Build Exceed Days	TEPA Exceed Days	Change in exceed	No Build Max, ug/m3	TEPA Max, ug/m3	Max pct change	No Build 90th %ile, ug/m3	TEPA 90th %ile, ug/m3	90th pct change
Fleming Crt	Residential	NOx 1 hr	400	64	2035	0	0	0	207	111	-46%	82	72	-12%
Mangin Cr	Residential	NOx 1 hr	400	64	2035	0	0	0	215	112	-48%	83	72	-14%
Northway and Norfolk - closest to ROW	Norfolk	NOx 1 hr	400	64	2035	0	0	0	190	108	-43%	78	70	-10%
Northway and Norfolk - closest to ROW	Norfolk	NOx 1 hr	400	64	2035	0	0	0	206	109	-47%	76	70	-8%
St. Cecile Academic Music - Grand Marais	School	NOx 1 hr	400	64	2035	0	0	0	167	99	-41%	83	69	-17%
Lambton - closest to ROW	Residential	NOx 1 hr	400	64	2035	0	0	0	147	100	-32%	74	68	-8%
Northway and Norfolk - middle of neighbourhood	Residential	NOx 1 hr	400	64	2035	0	0	0	150	96	-36%	75	68	-10%
Bellewood Estates	Residential	NOx 1 hr	400	64	2035	0	0	0	118	95	-20%	73	67	-9%
Lambton - 150 m from ROW	Residential	NOx 1 hr	400	64	2035	0	0	0	114	91	-20%	72	66	-9%
Bellewood Estates	Residential	NOx 1 hr	400	64	2035	0	0	0	106	94	-12%	71	66	-7%
Huron Estates	Residential	NOx 1 hr	400	64	2035	0	0	0	103	83	-20%	70	66	-7%
Reddock	Residential	NOx 1 hr	400	64	2035	0	0	0	135	81	-40%	69	65	-5%
10th and Todd	Residential	NOx 1 hr	400	64	2035	0	0	0	196	82	-58%	70	66	-6%
Hearthwood - within 50 m of ROW	Residential	NOx 1 hr	400	64	2035	0	0	0	119	91	-23%	68	68	-1%
Villa Borghese	Residential	NOx 1 hr	400	64	2035	0	0	0	135	76	-44%	69	67	-3%
Kendleton Court	Residential	NOx 1 hr	400	64	2035	0	0	0	179	80	-55%	72	68	-6%
Villa Borghese	Residential	NOx 1 hr	400	64	2035	0	0	0	148	74	-50%	69	66	-5%
Villa Borghese	Residential	NOx 1 hr	400	64	2035	0	0	0	165	76	-54%	74	66	-11%
Hearthwood - within 100 m of ROW	Residential	NOx 1 hr	400	64	2035	0	0	0	141	76	-46%	66	65	-2%
Villa Paradiso	Residential	NOx 1 hr	400	64	2035	0	0	0	113	75	-34%	67	66	-3%
Grosvenor to Croydon	Residential	NOx 1 hr	400	64	2035	0	0	0	148	84	-43%	68	66	-4%
Alpen Rose	Residential	NOx 1 hr	400	64	2035	0	0	0	104	73	-29%	67	66	-2%
Heritage Estates	Residential	NOx 1 hr	400	64	2035	0	0	0	102	73	-28%	65	65	-1%
Royal Oak Senior Home	Home	NOx 1 hr	400	64	2035	0	0	0	141	78	-45%	68	65	-4%
Royal Oak Senior Home	Home	NOx 1 hr	400	64	2035	0	0	0	154	78	-49%	67	65	-3%
Spring Garden	Residential	NOx 1 hr	400	64	2035	0	0	0	91	93	2%	68	67	-1%
Spring Garden	Residential	NOx 1 hr	400	64	2035	0	0	0	96	93	-3%	68	67	-2%
Spring Garden	Residential	NOx 1 hr	400	64	2035	0	0	0	101	89	-12%	70	67	-4%
Association for Persons with Physical Disabilities	Special Needs	NOx 1 hr	400	64	2035	0	0	0	91	84	-8%	68	66	-3%
Armanda	Residential	NOx 1 hr	400	64	2035	0	0	0	80	98	21%	66	66	0%
Chelsea	Residential	NOx 1 hr	400	64	2035	0	0	0	172	94	-46%	68	66	-2%
Broadway Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	78	172	121%	65	67	3%
Ojibway Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	74	92	24%	65	65	-1%
Malden Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	98	85	-13%	67	66	-1%
Victoria Memorial Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	75	71	-5%	64	64	1%
Sandwich First Baptist	Church	NOx 1 hr	400	64	2035	0	0	0	82	88	7%	65	65	-1%
A-Unknown Church	Church	NOx 1 hr	400	64	2035	0	0	0	91	90	-2%	66	65	-2%
Museum Land Mark	Museum	NOx 1 hr	400	64	2035	0	0	0	82	88	7%	65	65	-1%
Indian Memorial Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	130	102	-22%	77	72	-7%
Bellwood Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	106	102	-4%	71	66	-7%
Beals Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	135	78	-42%	70	65	-7%
Oakwood Public School	School	NOx 1 hr	400	64	2035	0	0	0	178	82	-54%	77	65	-15%
Oakwood Bible Chapel	Church	NOx 1 hr	400	64	2035	0	0	0	271	85	-69%	89	66	-26%
C-Unknown Church	Church	NOx 1 hr	400	64	2035	0	0	0	298	86	-71%	94	67	-29%
Our Lady Of Mount Caramel Separate School	School	NOx 1 hr	400	64	2035	0	0	0	126	77	-39%	72	66	-8%
Our Lady Of Mount Caramel Catholic Church	Church	NOx 1 hr	400	64	2035	0	0	0	111	74	-34%	69	66	-5%
Veteren Memorial Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	94	70	-26%	67	65	-3%
St Charbel Maronite Catholic Church	Church	NOx 1 hr	400	64	2035	0	0	0	91	80	-12%	65	66	1%
1- Unknown - Park & Golf Course	Golf Course	NOx 1 hr	400	64	2035	0	0	0	79	72	-9%	64	64	1%
St Stevens cemetery	Cemetery	NOx 1 hr	400	64	2035	0	0	0	77	74	-3%	64	65	1%
St Stevens Church	Church	NOx 1 hr	400	64	2035	0	0	0	77	80	4%	64	66	2%
Sikh Cultural Society	Centre	NOx 1 hr	400	64	2035	0	0	0	80	77	-4%	65	66	2%
Apostolic Christ Church	Church	NOx 1 hr	400	64	2035	0	0	0	81	74	-8%	65	66	1%
Heavenly Rest Cemetery	Cemetery	NOx 1 hr	400	64	2035	0	0	0	81	74	-8%	65	65	0%
St. Nicholas Macedonian Easter	Church	NOx 1 hr	400	64	2035	0	0	0	80	74	-8%	65	66	1%
D-Unknown Church	Church	NOx 1 hr	400	64	2035	0	0	0	79	75	-5%	65	66	1%
J.Jenner Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	86	75	-13%	66	65	-1%
Heritage Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	94	74	-21%	66	65	-1%
St Clair Park	Parkland	NOx 1 hr	400	64	2035	0	0	0	111	80	-27%	66	65	-2%
St Clair College Athletic Field 4 ball diamo	Atheletic Centre	NOx 1 hr	400	64	2035	0	0	0	142	77	-46%	71	66	-6%
St Clair College	School	NOx 1 hr	400	64	2035	0	0	0	92	71	-23%	67	65	-3%
Bellwood Public School	School	NOx 1 hr	400	64	2035	0	0	0	103	100	-3%	70	66	-6%
Ecole Monseigneur Jean-Noel	School	NOx 1 hr	400	64	2035	0	0	0	119	79	-34%	69	65	-5%
B-Unknown Church	Church	NOx 1 hr	400	64	2035	0	0	0	151	77	-49%	74	65	-12%

APPENDIX E: CARBON DIOXIDE CALCULATIONS

	2015		2025		2035	
	No Build	Parkway	No Build	Parkway	No Build	Parkway
Average AADT	45,844	59,372	46,086	69,430	53,140	77,224
Total vehicles/year	16,733,060	21,670,853	16,821,244	25,342,023	19,395,954	28,186,614
Average pct cars	64%		61%		58%	
Distance travelled, km	12		12		12	
Average car emission factor, 100 km/hr, g/vkt	348		351		351	
Average truck emission factor, 100 km/hr trucks, g/vkt	960		960		960	
Car emissions, kg/year	44,692,767	57,881,248	43,089,835	64,916,934	47,365,603	68,832,705
Truck emissions, kg/year	69,611,872	90,153,782	76,055,665	114,581,561	94,030,038	136,646,456
Total emissions, kilotonnes/year	114	148	119	179	141	205

Total 2000 transportation emissions, Kilotonnes	121,411					
Percent contribution to total transportation emissions	0.09%	0.12%	0.10%	0.15%	0.12%	0.17%

Total 2000 emissions, kilotonnes	584,578					
Percent contribution to total emissions	0.02%	0.03%	0.02%	0.03%	0.02%	0.04%

APPENDIX F: PM AND PM_{10} CONCENTRATIONS AT SENSITIVE RECEPTORS FOR ALL HORIZON YEARS AND FOR FIVE YEARS OF METEOROLOGICAL DATA

TABLE F1A – PM CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2015 HORIZON YEAR

		Exceedances, days							Maximum Concentration, ug/m3								
Area Recep	Receptor Name	2000	2001	2002	2003	2004	Maximum	Max - Excee	2000	2001	2002	2003	2004	Max	Max Year	Max-2003	Average
58	Fleming Crt	109	106	107	102	93	109	7	155	147	150	164	158	164	2003	0	155
63	Mangin Cr	142	148	144	142	130	148	6	186	173	181	172	190	190	2004	18	180
74	Northway and Norfolk - closest to ROW	156	164	164	156	149	164	8	183	173	176	177	192	192	2004	15	180
75	Northway and Norfolk - closest to ROW	154	164	164	155	148	164	9	181	166	174	179	188	188	2004	9	178
172	St. Cecile Academic Music - Grand Marais	73	75	72	73	62	75	2	148	141	141	148	152	152	2004	4	146
181	Lambton - closest to ROW	85	83	68	84	89	89	5	155	155	156	156	159	159	2004	2	156
186	Northway and Norfolk - middle of neighbourhood	69	65	63	58	57	69	11	141	137	141	144	149	149	2004	6	142
288	Bellewood Estates	2	0	0	1	2	2	1	122	119	118	130	126	130	2003	0	123
295	Lambton - 150 m from ROW	3	4	1	4	3	4	0	126	124	121	123	125	126	2000	3	124
403	Bellewood Estates	0	0	0	0	0	0	0	112	110	110	119	114	119	2003	0	113
410	Huron Estates	0	0	0	0	0	0	0	112	112	110	110	112	112	2000	2	111
423	Reddock	0	0	0	0	0	0	0	113	116	113	117	116	117	2003	0	115
425	10th and Todd	2	2	0	2	3	3	1	126	124	119	125	129	129	2004	4	125
703	Hearthwood - within 50 m of ROW	77	69	70	75	79	79	4	162	178	177	160	164	178	2001	19	168
757	Villa Borghese	7	3	3	8	9	9	1	129	122	124	129	127	129	2000	0	126
781	Kendleton Court	79	86	81	77	80	86	9	152	152	148	153	163	163	2004	10	154
827	Villa Borghese	0	0	0	0	0	0	0	112	111	109	113	114	114	2004	1	112
828	Villa Borghese	0	0	0	0	0	0	0	110	108	108	114	110	114	2003	0	110
840	Hearthwood - within 100 m of ROW	0	0	0	0	0	0	0	114	118	113	114	113	118	2001	4	114
848	Villa Paradiso	0	0	0	1	1	1	0	117	116	114	126	121	126	2003	0	119
858	Grosvenor to Croydon	21	18	15	23	26	26	3	144	143	142	137	143	144	2000	8	142
867	Alpen Rose	0	0	0	0	0	0	0	113	109	110	114	117	117	2004	3	113
910	Heritage Estates	0	0	0	0	0	0	0	107	107	106	103	104	107	2000	5	105
944	Royal Oak Senior Home	0	0	0	0	0	0	0	106	108	104	103	105	108	2001	5	105
945	Royal Oak Senior Home	0	0	0	0	0	0	0	107	109	102	103	105	109	2001	6	105
1513	Spring Garden	3	0	0	0	0	3	3	125	117	119	119	119	125	2000	7	120
1514	Spring Garden	2	0	0	0	0	2	2	124	117	119	117	116	124	2000	7	119
1516	Spring Garden	6	1	1	1	3	6	5	124	125	121	121	125	125	2001	4	123
1644	Association for Persons with Physical Disabilities	0	0	0	0	0	0	0	112	111	113	111	111	113	2002	2	111
1758	Armanda	0	0	0	0	0	0	0	108	105	105	104	105	108	2000	4	105
1997	Chelsea	44	43	40	42	37	44	2	150	152	146	160	159	160	2003	0	153
2450	Broadway Park	24	18	19	22	25	25	3	148	131	134	137	134	148	2000	11	137
2451	Ojibway Park	0	0	0	0	0	0	0	98	99	96	98	98	99	2001	1	98
2452	Malden Park	0	0	0	0	0	0	0	107	105	104	109	108	109	2003	0	107
2454	Victoria Memorial Park	0	0	0	0	0	0	0	108	102	104	104	106	108	2000	4	105
2455	Sandwich First Baptist	0	0	0	0	0	0	0	91	90	89	91	90	91	2003	0	90
2456	A-Unknown Church	0	0	0	0	0	0	0	91	91	90	92	91	92	2003	0	91
2457	Museum Land Mark	0	0	0	0	0	0	0	91	90	90	91	90	91	2003	0	90
2458	Indian Memorial Park	64	72	72	65	66	72	7	152	139	144	151	156	156	2004	5	148
2459	Bellwood Park	0	0	0	0	0	0	0	113	109	107	114	115	115	2004	1	112
2460	Beals Park	0	0	0	0	0	0	0	107	104	104	107	105	107	2003	0	105
2461	Oakwood Public School	0	0	0	0	0	0	0	107	105	106	107	109	109	2004	2	107
2462	Oakwood Bible Chapel	0	0	0	0	0	0	0	116	116	117	116	120	120	2004	4	117
2463	C-Unknown Church	9	10	5	6	9	10	4	126	127	126	123	132	132	2004	9	127
2464	Our Lady Of Mount Caramel Separate School	1	0	0	1	3	3	2	121	119	119	120	126	126	2004	6	121
2465	Our Lady Of Mount Caramel Catholic Church	0	0	0	0	0	0	0	111	111	111	112	112	112	2003	0	112
2466	Veteren Memorial Park	0	0	0	0	0	0	0	103	101	101	106	105	106	2003	0	103
2467	St Charbel Maronite Catholic Church	0	0	0	0	0	0	0	119	112	112	116	118	119	2000	3	115
2468	1- Unknown - Park & Golf Course	0	0	0	0	0	0	0	100	97	97	99	99	100	2000	1	98
2469	St Stevens cemetery	0	0	0	0	0	0	0	100	103	99	99	101	103	2001	4	100
2470	St Stevens Church	0	0	0	0	0	0	0	109	110	106	107	108	110	2001	3	108
2471	Sikh Cultural Society	0	0	0	0	0	0	0	107	106	108	106	106	108	2002	2	107
2472	Apostolic Christ Church	0	0	0	0	0	0	0	104	103	105	104	103	105	2002	1	104
2473	Heavenly Rest Cemetery	0	0	0	0	0	0	0	102	98	100	100	99	102	2000	2	100
2474	St. Nicholas Macedonian Easter	0	0	0	0	0	0	0	104	103	105	104	103	105	2002	1	104
2475	D-Unknown Church	0	0	0	0	0	0	0	104	104	103	103	103	104	2001	1	103
2476	J.Jenner Park	0	0	0	0	0	0	0	115	109	110	110	111	115	2000	5	111
2477	Heritage Park	0	0	0	0	0	0	0	111	108	108	106	106	111	2000	5	108
2478	St Clair Park	0	0	0	0	0	0	0	108	109	106	106	107	109	2001	3	107
2479	St Clair College Athletic Field 4 ball diamo	10	3	5	12	12	12	0	129	124	125	132	130	132	2003	0	128
2480	St Clair College	0	0	0	0	0	0	0	106	104	103	107	107	107	2003	0	105
2481	Bellwood Public School	0	0	0	0	0	0	0	110	107	105	112	112	112	2004	1	109
2482	Ecole Monseigneur Jean-Noel	0	0	0	0	0	0	0	106	104	103	106	104	106	2000	0	105
2483	B-Unknown Church	0	0	0	0	0	0	0	103	101	102	105	105	105	2003	0	103

TABLE F1B – PM CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2025 HORIZON YEAR

		Exceedances, days							Maximim Concentrations, ug/m3								
Area Rece	Receptor Name	2000	2001	2002	2003	2004	Max	lax - Excee	2000	2001	2002	2003	2004	Max	Max Year	Max-2003	Average
58	Fleming Crt	156	165	173	158	143	173	15	185	168	173	191	190	191	2003	0	181
63	Mangin Cr	170	181	191	175	173	191	16	236	233	240	230	238	240	2002	11	235
74	Northway and Norfolk - closest to ROW	166	178	189	172	170	189	17	201	192	195	196	212	212	2004	16	199
75	Northway and Norfolk - closest to ROW	169	181	192	175	171	192	17	199	183	193	197	208	208	2004	11	196
172	St. Cecile Academic Music - Grand Marais	142	148	153	148	131	153	5	183	171	165	180	176	183	2000	3	175
181	Lambton - closest to ROW	114	102	91	107	112	114	7	173	173	175	175	177	177	2004	3	175
186	Northway and Norfolk - middle of neighbourhood	118	119	121	107	103	121	14	153	148	154	157	162	162	2004	5	155
288	Bellewood Estates	50	49	39	40	49	50	10	142	138	135	155	149	155	2003	0	144
295	Lambton - 150 m from ROW	34	29	28	21	34	34	13	138	143	133	133	134	143	2001	11	136
403	Bellewood Estates	6	5	1	5	6	6	1	125	123	121	138	131	138	2003	0	127
410	Huron Estates	1	2	0	0	0	2	2	121	124	119	116	118	124	2001	8	120
423	Reddock	0	1	0	3	3	3	0	119	122	118	123	122	123	2003	0	121
425	10th and Todd	8	5	5	7	6	8	1	134	131	124	132	136	136	2004	5	131
703	Hearthwood - within 50 m of ROW	92	90	85	92	91	92	0	179	199	197	175	182	199	2001	24	186
757	Villa Borghese	25	18	17	19	26	26	7	135	128	130	134	133	135	2000	1	132
781	Kendleton Court	127	140	131	130	123	140	10	173	173	168	173	188	188	2004	15	175
827	Villa Borghese	0	0	0	0	0	0	0	116	116	112	117	119	119	2004	2	116
828	Villa Borghese	0	0	0	0	0	0	0	115	112	112	119	114	119	2003	0	114
840	Hearthwood - within 100 m of ROW	2	3	1	1	1	3	2	122	127	120	121	121	127	2001	6	122
848	Villa Paradiso	7	2	4	8	8	8	0	126	125	123	138	131	138	2003	0	129
858	Grosvenor to Croydon	39	36	34	46	40	46	0	160	159	157	150	158	160	2000	10	157
867	Alpen Rose	1	0	0	2	1	2	0	121	115	116	121	124	124	2004	3	119
910	Heritage Estates	0	0	0	0	0	0	0	113	113	112	108	109	113	2000	6	111
944	Royal Oak Senior Home	0	0	0	0	0	0	0	110	113	107	107	109	113	2001	6	109
945	Royal Oak Senior Home	0	0	0	0	0	0	0	112	114	106	108	110	114	2001	6	110
1513	Spring Garden	42	38	29	26	45	45	19	139	138	134	132	136	139	2000	8	136
1514	Spring Garden	19	17	12	13	19	19	6	134	135	127	128	131	135	2001	8	131
1516	Spring Garden	40	39	29	30	47	47	17	137	130	135	135	140	140	2004	5	136
1644	Association for Persons with Physical Disabilities	2	0	1	0	0	2	2	121	119	122	120	119	122	2002	2	120
1758	Armanda	1	0	0	0	0	1	1	122	115	117	115	117	122	2000	7	117
1997	Chelsea	58	64	51	52	61	64	12	170	172	163	183	177	183	2003	0	173
2450	Broadway Park	47	35	38	48	42	48	0	167	143	148	152	150	167	2000	15	152
2451	Ojibway Park	0	0	0	0	0	0	0	103	105	101	102	103	105	2001	3	103
2452	Malden Park	1	0	0	4	2	4	0	122	118	116	123	123	123	2004	0	120
2454	Victoria Memorial Park	0	0	0	0	0	0	0	114	108	110	110	113	114	2000	5	111
2455	Sandwich First Baptist	0	0	0	0	0	0	0	92	93	92	93	93	93	2003	0	93
2456	A-Unknown Church	0	0	0	0	0	0	0	94	93	93	94	94	94	2003	0	94
2457	Museum Land Mark	0	0	0	0	0	0	0	92	93	92	94	93	94	2003	0	93
2458	Indian Memorial Park	104	128	116	108	99	128	20	169	154	159	168	174	174	2004	6	165
2459	Bellwood Park	2	1	0	3	2	3	0	122	121	118	128	130	130	2004	2	124
2460	Beals Park	0	0	0	0	0	0	0	114	109	111	112	111	114	2000	3	111
2461	Oakwood Public School	0	0	0	0	0	0	0	113	111	110	110	114	114	2004	4	111
2462	Oakwood Bible Chapel	1	0	1	1	4	4	3	120	120	121	120	124	124	2004	4	121
2463	C-Unknown Church	22	19	13	17	18	22	5	131	132	131	128	138	138	2004	10	132
2464	Our Lady Of Mount Caramel Separate School	21	18	14	17	23	23	6	131	128	129	131	138	138	2004	7	131
2465	Our Lady Of Mount Caramel Catholic Church	0	0	0	0	0	0	0	119	119	119	120	120	120	2003	0	119
2466	Veteren Memorial Park	0	0	0	0	0	0	0	108	106	106	112	111	112	2003	0	109
2467	St Charbel Maronite Catholic Church	6	1	1	5	3	6	1	130	120	120	126	128	130	2000	4	125
2468	1- Unknown - Park & Golf Course	0	0	0	0	0	0	0	105	101	101	104	104	105	2000	1	103
2469	St Stevens cemetery	0	0	0	0	0	0	0	103	107	101	102	104	107	2001	5	103
2470	St Stevens Church	0	0	0	0	0	0	0	113	114	109	110	112	114	2001	4	112
2471	Sikh Cultural Society	0	0	0	0	0	0	0	110	109	112	110	109	112	2002	2	110
2472	Apostolic Christ Church	0	0	0	0	0	0	0	108	108	110	108	107	110	2002	2	108
2473	Heavenly Rest Cemetery	0	0	0	0	0	0	0	107	102	104	104	104	107	2000	3	104
2474	St. Nicholas Macedonian Easter	0	0	0	0	0	0	0	108	107	109	108	106	109	2002	2	108
2475	D-Unknown Church	0	0	0	0	0	0	0	108	108	108	107	107	108	2001	1	107
2476	J.Jenner Park	1	0	0	0	0	1	1	121	115	116	115	116	121	2000	6	116
2477	Heritage Park	0	0	0	0	0	0	0	118	115	114	112	111	118	2000	6	114
2478	St Clair Park	0	0	0	0	0	0	0	112	114	112	111	113	114	2001	3	112
2479	St Clair College Athletic Field 4 ball diamo	46	39	37	46	44	46	0	142	136	136	146	143	146	2003	0	141
2480	St Clair College	0	0	0	0	0	0	0	110	108	107	113	110	113	2003	0	110
2481	Bellwood Public School	0	0	0	1	2	2	1	119	116	116	124	125	125	2004	1	120
2482	Ecole Monseigneur Jean-Noel	0	0	0	0	0	0	0	116	111	110	111	110	116	2000	4	112
2483	B-Unknown Church	0	0	0	0	0	0	0	106	104	105	108	108	108	2003	0	106

TABLE F1C – PM CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2035 HORIZON YEAR

		Exceedances, days							Max Concentrations, ug/m3								
Receptor	SECTION	2000	2001	2002	2003	2004	Max	Max - 2003	2000	2001	2002	2003	2004	Max	Max Year	Max-2003	Average
58	Fleming Crt	167	182	187	174	164	187	13	206	193	196	220	211	220	2003	0	205
63	Mangin Cr	177	191	197	181	178	197	16	268	268	279	257	276	279	2002	22	269
74	Northway and Norfolk - closest to ROW	172	184	195	178	177	195	17	208	203	205	205	222	222	2004	16	209
75	Northway and Norfolk - closest to ROW	172	184	198	180	180	198	18	207	190	201	205	217	217	2004	12	204
172	St. Cecile Academic Music - Grand Marais	156	156	167	158	143	167	9	203	185	181	189	188	203	2000	14	189
181	Lambton - closest to ROW	128	112	98	123	128	128	5	187	188	189	190	193	193	2004	3	189
186	Northway and Norfolk - middle of neighbourhood	141	143	147	134	121	147	13	161	156	161	166	170	170	2004	5	163
288	Bellewood Estates	78	84	78	75	64	84	9	156	150	141	171	163	171	2003	0	156
295	Lambton - 150 m from ROW	67	59	46	52	62	67	15	146	155	140	141	142	155	2001	14	145
403	Bellewood Estates	24	21	18	17	23	24	7	134	132	127	150	141	150	2003	0	137
410	Huron Estates	9	8	5	3	8	9	6	127	134	124	123	124	134	2001	10	126
423	Reddock	5	3	4	6	6	6	0	125	130	127	131	130	131	2003	0	128
425	10th and Todd	25	22	16	24	23	25	1	142	142	134	141	146	146	2004	5	141
703	Hearthwood - within 50 m of ROW	107	105	96	107	107	107	0	197	219	218	191	200	219	2001	29	205
757	Villa Borghese	42	43	46	46	49	49	3	143	134	136	142	140	143	2000	1	139
781	Kendleton Court	153	159	155	155	142	159	4	192	192	186	191	210	210	2004	19	194
827	Villa Borghese	1	1	0	2	3	3	1	121	121	117	122	124	124	2004	2	121
828	Villa Borghese	0	0	0	1	0	1	0	119	115	116	123	119	123	2003	0	119
840	Hearthwood - within 100 m of ROW	8	11	4	5	7	11	6	130	135	126	128	129	135	2001	7	130
848	Villa Paradiso	15	12	10	22	21	22	0	134	133	130	149	140	149	2003	0	137
858	Grosvenor to Croydon	49	51	43	56	53	56	0	169	169	166	158	167	169	2000	11	166
867	Alpen Rose	1	0	0	4	5	5	1	124	118	119	124	128	128	2004	4	123
910	Heritage Estates	0	0	0	0	0	0	0	118	117	116	111	113	118	2000	7	115
944	Royal Oak Senior Home	0	0	0	0	0	0	0	115	119	111	112	113	119	2001	8	114
945	Royal Oak Senior Home	0	0	0	0	0	0	0	117	120	111	113	115	120	2001	7	115
1513	Spring Garden	79	66	66	68	75	79	11	157	144	146	145	146	157	2000	12	148
1514	Spring Garden	71	59	58	63	68	71	8	155	145	145	141	141	155	2000	14	145
1516	Spring Garden	100	81	76	74	95	100	26	156	156	149	150	158	158	2004	8	154
1644	Association for Persons with Physical Disabilities	30	22	20	17	24	30	13	133	132	134	131	131	134	2002	3	132
1758	Armanda	4	1	1	0	1	4	4	127	120	121	119	121	127	2000	8	121
1997	Chelsea	68	78	60	64	78	78	14	183	185	176	198	190	198	2003	0	186
2450	Broadway Park	56	37	43	53	51	56	3	175	149	154	157	155	175	2000	18	158
2451	Ojibway Park	0	0	0	0	0	0	0	105	108	103	104	106	108	2001	4	105
2452	Malden Park	4	1	0	6	7	7	1	125	122	120	127	127	127	2003	0	124
2454	Victoria Memorial Park	0	0	0	0	0	0	0	119	112	114	114	117	119	2000	5	115
2455	Sandwich First Baptist	0	0	0	0	0	0	0	93	95	93	95	95	95	2003	0	94
2456	A-Unknown Church	0	0	0	0	0	0	0	95	95	94	96	96	96	2003	0	95
2457	Museum Land Mark	0	0	0	0	0	0	0	93	95	93	95	95	95	2003	0	94
2458	Indian Memorial Park	132	152	143	134	126	152	18	183	166	172	182	189	189	2004	8	179
2459	Bellwood Park	22	16	12	12	21	22	10	130	130	126	139	139	139	2003	0	133
2460	Beals Park	0	0	0	0	0	0	0	119	113	115	115	115	119	2000	4	115
2461	Oakwood Public School	0	0	0	0	0	0	0	117	115	115	115	119	119	2004	3	116
2462	Oakwood Bible Chapel	8	5	4	3	12	12	9	126	123	126	130	128	130	2003	0	127
2463	C-Unknown Church	36	38	29	30	33	38	8	135	135	136	137	141	141	2004	4	137
2464	Our Lady Of Mount Caramel Separate School	52	50	51	50	49	52	2	140	136	137	140	148	148	2004	9	140
2465	Our Lady Of Mount Caramel Catholic Church	10	8	3	5	8	10	5	126	125	126	127	127	127	2004	0	126
2466	Veteren Memorial Park	0	0	0	0	0	0	0	113	110	110	118	116	118	2003	0	113
2467	St Charbel Maronite Catholic Church	15	9	8	17	12	17	0	139	127	128	134	135	139	2000	5	132
2468	1- Unknown - Park & Golf Course	0	0	0	0	0	0	0	109	104	104	108	107	109	2000	1	106
2469	St Stevens cemetery	0	0	0	0	0	0	0	105	108	103	104	107	108	2001	4	105
2470	St Stevens Church	0	0	0	0	0	0	0	116	117	112	114	115	117	2001	3	115
2471	Sikh Cultural Society	0	0	0	0	0	0	0	113	113	115	113	111	115	2002	2	113
2472	Apostolic Christ Church	0	0	0	0	0	0	0	112	111	114	112	109	114	2002	2	111
2473	Heavenly Rest Cemetery	0	0	0	0	0	0	0	110	104	107	106	107	110	2000	4	107
2474	St. Nicholas Macedonian Easter	0	0	0	0	0	0	0	111	111	113	111	109	113	2002	2	111
2475	D-Unknown Church	0	0	0	0	0	0	0	111	111	111	110	110	111	2002	2	111
2476	J.Jenner Park	3	0	0	0	1	3	3	125	119	120	119	120	125	2000	7	121
2477	Heritage Park	2	0	0	0	0	2	2	123	119	118	116	116	123	2000	7	118
2478	St Clair Park	0	0	0	0	0	0	0	116	119	117	116	118	119	2001	3	117
2479	St Clair College Athletic Field 4 ball diamo	80	81	82	81	77	82	1	154	146	146	159	155	159	2003	0	152
2480	St Clair College	0	0	0	0	0	0	0	114	113	112	119	115	119	2003	0	114
2481	Bellwood Public School	8	8	7	5	7	8	3	127	123	122	134	133	134	2003	0	128
2482	Ecole Monseigneur Jean-Noel	1	0	0	0	0	1	1	121	115	115	115	115	121	2000	6	116
2483	B-Unknown Church	0	0	0	0	0	0	0	110	108	109	113	112	113	2003	0	110

TABLE F2A – PM_{10} CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2015 HORIZON YEAR

		Exceedances, days							Maximum Concentration, ug/m3							
Area Recep	Receptor Name	2000	2001	2002	2003	2004	Maximum	Max - Exceed	2000	2001	2002	2003	2004	Max	Max Year	Max-2003	Average
58	Fleming Crt	109	106	107	102	93	109	7	155	147	150	164	158	164	2003	0	155
63	Mangin Cr	142	148	144	142	130	148	6	186	173	181	172	190	190	2004	18	180
74	Northway and Norfolk - closest to ROW	156	164	164	156	148	164	8	183	173	176	177	192	192	2004	15	180
75	Northway and Norfolk - closest to ROW	154	164	164	155	148	164	9	181	166	174	179	188	188	2004	9	178
172	St. Cecile Academic Music - Grand Marais	73	75	72	73	62	75	2	148	141	141	148	152	152	2004	4	146
181	Lambton - closest to ROW	85	83	68	84	89	89	5	155	155	156	156	159	159	2004	2	156
186	Northway and Norfolk - middle of neighbourhood	69	65	63	58	57	69	11	141	137	141	144	149	149	2004	6	142
288	Bellewood Estates	2	0	0	1	2	2	1	122	119	118	130	126	130	2003	0	123
295	Lambton - 150m from ROW	3	4	1	4	3	4	0	126	124	121	123	125	126	2000	3	124
403	Bellewood Estates	0	0	0	0	0	0	0	112	110	110	119	114	119	2003	0	113
410	Huron Estates	0	0	0	0	0	0	0	112	112	110	110	112	112	2000	2	111
423	Reddock	0	0	0	0	0	0	0	113	116	113	117	116	117	2003	0	115
425	10th and Todd	2	2	0	2	3	3	1	126	124	119	125	129	129	2004	4	125
703	Hearthwood - within 50 m of ROW	77	69	70	75	79	79	4	162	178	177	160	164	178	2001	19	168
757	Villa Borghese	7	3	3	8	9	9	1	129	122	124	129	127	129	2000	0	126
781	Kendleton Court	79	86	81	77	80	86	9	152	152	148	153	163	163	2004	10	154
827	Villa Borghese	0	0	0	0	0	0	0	112	111	109	113	114	114	2004	1	112
828	Villa Borghese	0	0	0	0	0	0	0	110	108	108	114	110	114	2003	0	110
840	Hearthwood - within 100 m of ROW	0	0	0	0	0	0	0	114	118	113	114	113	118	2001	4	114
848	Villa Paradiso	0	0	0	1	1	1	0	117	116	114	126	121	126	2003	0	119
858	Grosvenor to Croydon	21	18	15	23	26	26	3	144	143	142	137	143	144	2000	8	142
867	Alpen Rose	0	0	0	0	0	0	0	113	109	110	114	117	117	2004	3	113
910	Heritage Estates	0	0	0	0	0	0	0	107	107	106	103	104	107	2000	5	105
944	Royal Oak Senior Home	0	0	0	0	0	0	0	106	108	104	103	105	108	2001	5	105
945	Royal Oak Senior Home	0	0	0	0	0	0	0	107	109	102	103	105	109	2001	6	105
1513	Spring Garden	3	0	0	0	0	3	3	125	117	119	119	119	125	2000	7	120
1514	Spring Garden	2	0	0	0	0	2	2	124	117	119	117	116	124	2000	7	119
1516	Spring Garden	6	1	1	1	3	6	5	124	125	121	121	125	125	2001	4	123
1644	Association for Persons with Physical Disabilities	0	0	0	0	0	0	0	112	111	113	111	111	113	2002	2	111
1758	Armanda	0	0	0	0	0	0	0	108	105	105	104	105	108	2000	4	105
1997	Chelsea	44	43	40	42	37	44	2	150	152	146	160	159	160	2003	0	153
2450	Broadway Park	24	18	19	22	25	25	3	148	131	134	137	134	148	2000	11	137
2451	Ojibway Park	0	0	0	0	0	0	0	98	99	96	98	98	99	2001	1	98
2452	Malden Park	0	0	0	0	0	0	0	107	105	104	109	108	109	2003	0	107
2454	Victoria Memorial Park	0	0	0	0	0	0	0	108	102	104	104	106	108	2000	4	105
2455	Sandwich First Baptist	0	0	0	0	0	0	0	91	90	89	91	90	91	2003	0	90
2456	A-Unknown Church	0	0	0	0	0	0	0	91	91	90	92	91	92	2003	0	91
2457	Museum Land Mark	0	0	0	0	0	0	0	91	90	90	91	90	91	2003	0	90
2458	Indian Memorial Park	64	72	72	65	66	72	7	152	139	144	151	156	156	2004	5	148
2459	Bellwood Park	0	0	0	0	0	0	0	113	109	107	114	115	115	2004	1	112
2460	Beals Park	0	0	0	0	0	0	0	107	104	104	107	105	107	2003	0	105
2461	Oakwood Public School	0	0	0	0	0	0	0	107	105	106	107	109	109	2004	2	107
2462	Oakwood Bible Chapel	0	0	0	0	0	0	0	116	116	117	116	120	120	2004	4	117
2463	C-Unknown Church	9	10	5	6	9	10	4	126	127	126	123	132	132	2004	9	127
2464	Our Lady Of Mount Caramel Separate School	1	0	0	1	3	3	2	121	119	119	120	126	126	2004	6	121
2465	Our Lady Of Mount Caramel Catholic Church	0	0	0	0	0	0	0	111	111	111	112	112	112	2003	0	112
2466	Veteren Memorial Park	0	0	0	0	0	0	0	103	101	101	106	105	106	2003	0	103
2467	St Charbel Maronite Catholic Church	0	0	0	0	0	0	0	119	112	112	116	118	119	2000	3	115
2468	1- Unknown - Park & Golf Course	0	0	0	0	0	0	0	100	97	97	99	99	100	2000	1	98
2469	St Stevens cemetery	0	0	0	0	0	0	0	100	103	99	99	101	103	2001	4	100
2470	St Stevens Church	0	0	0	0	0	0	0	109	110	106	107	108	110	2001	3	108
2471	Sikh Cultural Society	0	0	0	0	0	0	0	107	106	108	106	106	108	2002	2	107
2472	Apostolic Christ Church	0	0	0	0	0	0	0	104	103	105	104	103	105	2002	1	104
2473	Heavenly Rest Cemetery	0	0	0	0	0	0	0	102	98	100	100	99	102	2000	2	100
2474	St. Nicholas Macedonian Easter	0	0	0	0	0	0	0	104	103	105	104	103	105	2002	1	104
2475	D-Unknown Church	0	0	0	0	0	0	0	104	104	103	103	103	104	2001	1	103
2476	J Jenner Park	0	0	0	0	0	0	0	115	109	110	110	111	115	2000	5	111
2477	Heritage Park	0	0	0	0	0	0	0	111	108	108	106	106	111	2000	5	108
2478	St Clair Park	0	0	0	0	0	0	0	108	109	106	106	107	109	2001	3	107
2479	St Clair College Athletic Field 4 ball diamo	10	3	5	12	12	12	0	129	124	125	132	130	132	2003	0	128
2480	St Clair College	0	0	0	0	0	0	0	106	104	103	107	107	107	2003	0	105
2481	Bellwood Public School	0	0	0	0	0	0	0	110	107	105	112	112	112	2004	1	109
2482	Ecole Monseigneur Jean-Noel	0	0	0	0	0	0	0	106	104	103	106	104	106	2000	0	105
2483	B-Unknown Church	0	0	0	0	0	0	0	103	101	102	105	105	105	2003	0	103

TABLE F2B – PM_{10} CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2025 HORIZON YEAR

		Exceedances, days							Maximim Concentrations, ug/m3								
Area Rece	Receptor Name	2000	2001	2002	2003	2004	Max	lax - Excee	2000	2001	2002	2003	2004	Max	Max Year	Max-2003	Average
58	Fleming Crt	156	165	173	158	143	173	15	185	168	173	191	190	191	2003	0	181
63	Mangin Cr	170	181	191	175	173	191	16	236	233	240	230	238	240	2002	11	235
74	Northway and Norfolk - closest to ROW	166	178	189	172	170	189	17	201	192	195	196	212	212	2004	16	199
75	Northway and Norfolk - closest to ROW	169	181	192	175	171	192	17	199	183	193	197	208	208	2004	11	196
172	St. Cecile Academic Music - Grand Marais	142	148	153	148	131	153	5	183	171	165	180	176	183	2000	3	175
181	Lambton - closest to ROW	114	102	91	107	112	114	7	173	173	175	175	177	177	2004	3	175
186	Northway and Norfolk - middle of neighbourhood	118	119	121	107	103	121	14	153	148	154	157	162	162	2004	5	155
288	Bellewood Estates	50	49	39	40	49	50	10	142	138	135	155	149	155	2003	0	144
295	Lambton - 150 m from ROW	34	29	28	21	34	34	13	138	143	133	133	134	143	2001	11	136
403	Bellewood Estates	6	5	1	5	6	6	1	125	123	121	138	131	138	2003	0	127
410	Huron Estates	1	2	0	0	0	2	2	121	124	119	116	118	124	2001	8	120
423	Reddock	0	1	0	3	3	3	0	119	122	118	123	122	123	2003	0	121
425	10th and Todd	8	5	5	7	6	8	1	134	131	124	132	136	136	2004	5	131
703	Hearthwood - within 50 m of ROW	92	90	85	92	91	92	0	179	199	197	175	182	199	2001	24	186
757	Villa Borghese	25	18	17	19	26	26	7	135	128	130	134	133	135	2000	1	132
781	Kendleton Court	127	140	131	130	123	140	10	173	173	168	173	188	188	2004	15	175
827	Villa Borghese	0	0	0	0	0	0	0	116	116	112	117	119	119	2004	2	116
828	Villa Borghese	0	0	0	0	0	0	0	115	112	112	119	114	119	2003	0	114
840	Hearthwood - within 100 m of ROW	2	3	1	1	1	3	2	122	127	120	121	121	127	2001	6	122
848	Villa Paradiso	7	2	4	8	8	8	0	126	125	123	138	131	138	2003	0	129
858	Grosvenor to Croydon	39	36	34	46	40	46	0	160	159	157	150	158	160	2000	10	157
867	Alpen Rose	1	0	0	2	1	2	0	121	115	116	121	124	124	2004	3	119
910	Heritage Estates	0	0	0	0	0	0	0	113	113	112	108	109	113	2000	6	111
944	Royal Oak Senior Home	0	0	0	0	0	0	0	110	113	107	107	109	113	2001	6	109
945	Royal Oak Senior Home	0	0	0	0	0	0	0	112	114	106	108	110	114	2001	6	110
1513	Spring Garden	42	38	29	26	45	45	19	139	138	134	132	136	139	2000	8	136
1514	Spring Garden	19	17	12	13	19	19	6	134	135	127	128	131	135	2001	8	131
1516	Spring Garden	40	39	29	30	47	47	17	137	130	135	135	140	140	2004	5	136
1644	Association for Persons with Physical Disabilities	2	0	1	0	0	2	2	121	119	122	120	119	122	2002	2	120
1758	Armanda	1	0	0	0	0	1	1	122	115	117	115	117	122	2000	7	117
1997	Chelsea	58	64	51	52	61	64	12	170	172	163	183	177	183	2003	0	173
2450	Broadway Park	47	35	38	48	42	48	0	167	143	148	152	150	167	2000	15	152
2451	Ojibway Park	0	0	0	0	0	0	0	103	105	101	102	103	105	2001	3	103
2452	Malden Park	1	0	0	4	2	4	0	122	118	116	123	123	123	2004	0	120
2454	Victoria Memorial Park	0	0	0	0	0	0	0	114	108	110	110	113	114	2000	5	111
2455	Sandwich First Baptist	0	0	0	0	0	0	0	92	93	92	93	93	93	2003	0	93
2456	A-Unknown Church	0	0	0	0	0	0	0	94	93	93	94	94	94	2003	0	94
2457	Museum Land Mark	0	0	0	0	0	0	0	92	93	92	94	93	94	2003	0	93
2458	Indian Memorial Park	104	128	116	108	99	128	20	169	154	159	168	174	174	2004	6	165
2459	Bellwood Park	2	1	0	3	2	3	0	122	121	118	128	130	130	2004	2	124
2460	Beals Park	0	0	0	0	0	0	0	114	109	111	112	111	114	2000	3	111
2461	Oakwood Public School	0	0	0	0	0	0	0	113	111	110	110	114	114	2004	4	111
2462	Oakwood Bible Chapel	1	0	1	1	4	4	3	120	120	121	120	124	124	2004	4	121
2463	C-Unknown Church	22	19	13	17	18	22	5	131	132	131	128	138	138	2004	10	132
2464	Our Lady Of Mount Caramel Separate School	21	18	14	17	23	23	6	131	128	129	131	138	138	2004	7	131
2465	Our Lady Of Mount Caramel Catholic Church	0	0	0	0	0	0	0	119	119	119	120	120	120	2003	0	119
2466	Veteren Memorial Park	0	0	0	0	0	0	0	108	106	106	112	111	112	2003	0	109
2467	St Charbel Maronite Catholic Church	6	1	1	5	3	6	1	130	120	120	126	128	130	2000	4	125
2468	1- Unknown - Park & Golf Course	0	0	0	0	0	0	0	105	101	101	104	104	105	2000	1	103
2469	St Stevens cemetery	0	0	0	0	0	0	0	103	107	101	102	104	107	2001	5	103
2470	St Stevens Church	0	0	0	0	0	0	0	113	114	109	110	112	114	2001	4	112
2471	Sikh Cultural Society	0	0	0	0	0	0	0	110	109	112	110	109	112	2002	2	110
2472	Apostolic Christ Church	0	0	0	0	0	0	0	108	108	110	108	107	110	2002	2	108
2473	Heavenly Rest Cemetery	0	0	0	0	0	0	0	107	102	104	104	104	107	2000	3	104
2474	St. Nicholas Macedonian Easter	0	0	0	0	0	0	0	108	107	109	108	106	109	2002	2	108
2475	D-Unknown Church	0	0	0	0	0	0	0	108	108	108	107	107	108	2001	1	107
2476	J.Jenner Park	1	0	0	0	0	1	1	121	115	116	115	116	121	2000	6	116
2477	Heritage Park	0	0	0	0	0	0	0	118	115	114	112	111	118	2000	6	114
2478	St Clair Park	0	0	0	0	0	0	0	112	114	112	111	113	114	2001	3	112
2479	St Clair College Athletic Field 4 ball diamo	46	39	37	46	44	46	0	142	136	136	146	143	146	2003	0	141
2480	St Clair College	0	0	0	0	0	0	0	110	108	107	113	110	113	2003	0	110
2481	Bellwood Public School	0	0	0	1	2	2	1	119	116	116	124	125	125	2004	1	120
2482	Ecole Monseigneur Jean-Noel	0	0	0	0	0	0	0	116	111	110	111	110	116	2000	4	112
2483	B-Unknown Church	0	0	0	0	0	0	0	106	104	105	108	108	108	2003	0	106

TABLE F2C – PM_{10} CONCENTRATIONS AT SENSITIVE RECEPTORS FOR 2035 HORIZON YEAR

		Exceedances, days							Max Concentrations, ug/m3								
Receptor	SECTION	2000	2001	2002	2003	2004	Max	Max - 2003	2000	2001	2002	2003	2004	Max	Max Year	Max-2003	Average
58	Fleming Crt	167	182	187	174	164	187	13	206	193	196	220	211	220	2003	0	205
63	Mangin Cr	177	191	197	181	178	197	16	268	268	279	257	276	279	2002	22	269
74	Northway and Norfolk - closest to ROW	172	184	195	178	177	195	17	208	203	205	205	222	222	2004	16	209
75	Northway and Norfolk - closest to ROW	172	184	198	180	180	198	18	207	190	201	205	217	217	2004	12	204
172	St. Cecile Academic Music - Grand Marais	156	156	167	158	143	167	9	203	185	181	189	188	203	2000	14	189
181	Lambton - closest to ROW	128	112	98	123	128	128	5	187	188	189	190	193	193	2004	3	189
186	Northway and Norfolk - middle of neighbourhood	141	143	147	134	121	147	13	161	156	161	166	170	170	2004	5	163
288	Bellewood Estates	78	84	78	75	64	84	9	156	150	141	171	163	171	2003	0	156
295	Lambton - 150 m from ROW	67	59	46	52	62	67	15	146	155	140	141	142	155	2001	14	145
403	Bellewood Estates	24	21	18	17	23	24	7	134	132	127	150	141	150	2003	0	137
410	Huron Estates	9	8	5	3	8	9	6	127	134	124	123	124	134	2001	10	126
423	Reddock	5	3	4	6	6	6	0	125	130	127	131	130	131	2003	0	128
425	10th and Todd	25	22	16	24	23	25	1	142	142	134	141	146	146	2004	5	141
703	Hearthwood - within 50 m of ROW	107	105	96	107	107	107	0	197	219	218	191	200	219	2001	29	205
757	Villa Borghese	42	43	46	46	49	49	3	143	134	136	142	140	143	2000	1	139
781	Kendleton Court	153	159	155	155	142	159	4	192	192	186	191	210	210	2004	19	194
827	Villa Borghese	1	1	0	2	3	3	1	121	121	117	122	124	124	2004	2	121
828	Villa Borghese	0	0	0	1	0	1	0	119	115	116	123	119	123	2003	0	119
840	Hearthwood - within 100 m of ROW	8	11	4	5	7	11	6	130	135	126	128	129	135	2001	7	130
848	Villa Paradiso	15	12	10	22	21	22	0	134	133	130	149	140	149	2003	0	137
858	Grosvenor to Croydon	49	51	43	56	53	56	0	169	169	166	158	167	169	2000	11	166
867	Alpen Rose	1	0	0	4	5	5	1	124	118	119	124	128	128	2004	4	123
910	Heritage Estates	0	0	0	0	0	0	0	118	117	116	111	113	118	2000	7	115
944	Royal Oak Senior Home	0	0	0	0	0	0	0	115	119	111	112	113	119	2001	8	114
945	Royal Oak Senior Home	0	0	0	0	0	0	0	117	120	111	113	115	120	2001	7	115
1513	Spring Garden	79	66	66	68	75	79	11	157	144	146	145	146	157	2000	12	148
1514	Spring Garden	71	59	58	63	68	71	8	155	145	145	141	141	155	2000	14	145
1516	Spring Garden	100	81	76	74	95	100	26	156	156	149	150	158	158	2004	8	154
1644	Association for Persons with Physical Disabilities	30	22	20	17	24	30	13	133	132	134	131	131	134	2002	3	132
1758	Armanda	4	1	1	0	1	4	4	127	120	121	119	121	127	2000	8	121
1997	Chelsea	68	78	60	64	78	78	14	183	185	176	198	190	198	2003	0	186
2450	Broadway Park	56	37	43	53	51	56	3	175	149	154	157	155	175	2000	18	158
2451	Ojibway Park	0	0	0	0	0	0	0	105	108	103	104	106	108	2001	4	105
2452	Malden Park	4	1	0	6	7	7	1	125	122	120	127	127	127	2003	0	124
2454	Victoria Memorial Park	0	0	0	0	0	0	0	119	112	114	114	117	119	2000	5	115
2455	Sandwich First Baptist	0	0	0	0	0	0	0	93	95	93	95	95	95	2003	0	94
2456	A-Unknown Church	0	0	0	0	0	0	0	95	95	94	96	96	96	2003	0	95
2457	Museum Land Mark	0	0	0	0	0	0	0	93	95	93	95	95	95	2003	0	94
2458	Indian Memorial Park	132	152	143	134	126	152	18	183	166	172	182	189	189	2004	8	179
2459	Bellwood Park	22	16	12	12	21	22	10	130	130	126	139	139	139	2003	0	133
2460	Beals Park	0	0	0	0	0	0	0	119	113	115	115	115	119	2000	4	115
2461	Oakwood Public School	0	0	0	0	0	0	0	117	115	115	115	119	119	2004	3	116
2462	Oakwood Bible Chapel	8	5	4	3	12	12	9	126	123	126	130	128	130	2003	0	127
2463	C-Unknown Church	36	38	29	30	33	38	8	135	135	136	137	141	141	2004	4	137
2464	Our Lady Of Mount Caramel Separate School	52	50	51	50	49	52	2	140	136	137	140	148	148	2004	9	140
2465	Our Lady Of Mount Caramel Catholic Church	10	8	3	5	8	10	5	126	125	126	127	127	127	2004	0	126
2466	Veteren Memorial Park	0	0	0	0	0	0	0	113	110	110	118	116	118	2003	0	113
2467	St Charbel Maronite Catholic Church	15	9	8	17	12	17	0	139	127	128	134	135	139	2000	5	132
2468	1- Unknown - Park & Golf Course	0	0	0	0	0	0	0	109	104	104	108	107	109	2000	1	106
2469	St Stevens cemetery	0	0	0	0	0	0	0	105	108	103	104	107	108	2001	4	105
2470	St Stevens Church	0	0	0	0	0	0	0	116	117	112	114	115	117	2001	3	115
2471	Sikh Cultural Society	0	0	0	0	0	0	0	113	113	115	113	111	115	2002	2	113
2472	Apostolic Christ Church	0	0	0	0	0	0	0	112	111	114	112	109	114	2002	2	111
2473	Heavenly Rest Cemetery	0	0	0	0	0	0	0	110	104	107	106	107	110	2000	4	107
2474	St. Nicholas Macedonian Easter	0	0	0	0	0	0	0	111	111	113	111	109	113	2002	2	111
2475	D-Unknown Church	0	0	0	0	0	0	0	111	111	111	110	110	111	2002	2	111
2476	J.Jenner Park	3	0	0	0	1	3	3	125	119	120	119	120	125	2000	7	121
2477	Heritage Park	2	0	0	0	0	2	2	123	119	118	116	116	123	2000	7	118
2478	St Clair Park	0	0	0	0	0	0	0	116	119	117	116	118	119	2001	3	117
2479	St Clair College Athletic Field 4 ball diamo	80	81	82	81	77	82	1	154	146	146	159	155	159	2003	0	152
2480	St Clair College	0	0	0	0	0	0	0	114	113	112	119	115	119	2003	0	114
2481	Bellwood Public School	8	8	7	5	7	8	3	127	123	122	134	133	134	2003	0	128
2482	Ecole Monseigneur Jean-Noel	1	0	0	0	0	1	1	121	115	115	115	115	121	2000	6	116
2483	B-Unknown Church	0	0	0	0	0	0	0	110	108	109	113	112	113	2003	0	110