APPENDIX G

Air Quality Impact Assessment

HIGHWAY 401 PLANNING STUDY FROM COLBORNE TO BRIGHTON PRELIMINARY DESIGN AND CLASS ENVIRONMENTAL ASSESSMENT

AIR QUALITY IMPACT ASSESSMENT

ONTARIO MINISTRY OF TRANSPORTATION, EASTERN REGION

FINAL

PROJECT NO.: 17M-01712-11
CLIENT REF:GWP 4054-17-00
DATE: NOVEMBER 01, 2023

WSP
UNIT 2
126 DON HILLOCK DRIVE
AURORA, ON, CANADA L4G 0G9

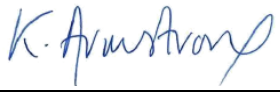
T: +1 905 750-3080
F: +1 905 727-0463
WSP.COM

SIGNATURES

PREPARED BY

Stephanie Clarke, B.A.
Air Quality Specialist

APPROVED BY



Katie Armstrong, M.Sc.
Team Lead – Air Quality Modelling and Permitting (Ontario)

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

The Ontario Ministry of Transportation (MTO) is currently undertaking a Group 'B' Class Environmental Assessment (EA) study for the proposed widening of the Highway 401 ('Project') from Colborne, Ontario to Brighton, Ontario ('Study Area'). The proposed Project would widen Highway 401 from four lanes to an interim six lanes and ultimate eight lanes within the Study Area; however, the Project is not expected to increase vehicle traffic to the Study Area. Specific elements of the Project include:

- Replacement of three bridges and four structural culverts within the Study Area;
- Provision for future Highway 401 conditions:
  - 6-lanes (interim)
  - 8-lanes (ultimate)
- Commuter parking lot improvements at County Road 30.

The Air Quality Impact Assessment (AQIA) was completed following guidance outlined in the MTO Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects (May 2020) for Group 'B' projects (MTO Guide). The AQIA assessment evaluates the impact of traffic related air pollution (TRAP) concentrations in the Study Area based on information available at the time of the assessment, any future modification would be subject to assessment during the future design stages.

1.1 STUDY AREA

The west study limit is 0.8 km east of Percy Street and the east study limit is 0.4 km west of Christiani Road. The study area excludes the Highway 30 Interchange, which was the subject of a previously completed EA in 2005, with the exception of a commuter parking lot at the interchange, which is included in this study.

The municipalities within the study area include the Township of Cramahe, the Municipality of Brighton, and Northumberland County. The City of Quinte West is to the east of the study area.

The Study Area is shown in **Figure 1-1.** Highway 401 Study Area extends from Colborne, Ontario to Brighton, Ontario and consists of seven sections.

Section 1	East of Percy St to West of Lake Rd
Section 2	East of Section 1 to West of Lake Rd
Section 3	West of Lake Rd to West of Cochrane Rd
Section 4	East of Section 3 to East of Cochrane Rd
Section 5	East of Cochrane Rd to West of County Road 30
Section 6	West of County Road 26 to West of County Road 26
Section 7	East of County Road 26 to Christiani Rd

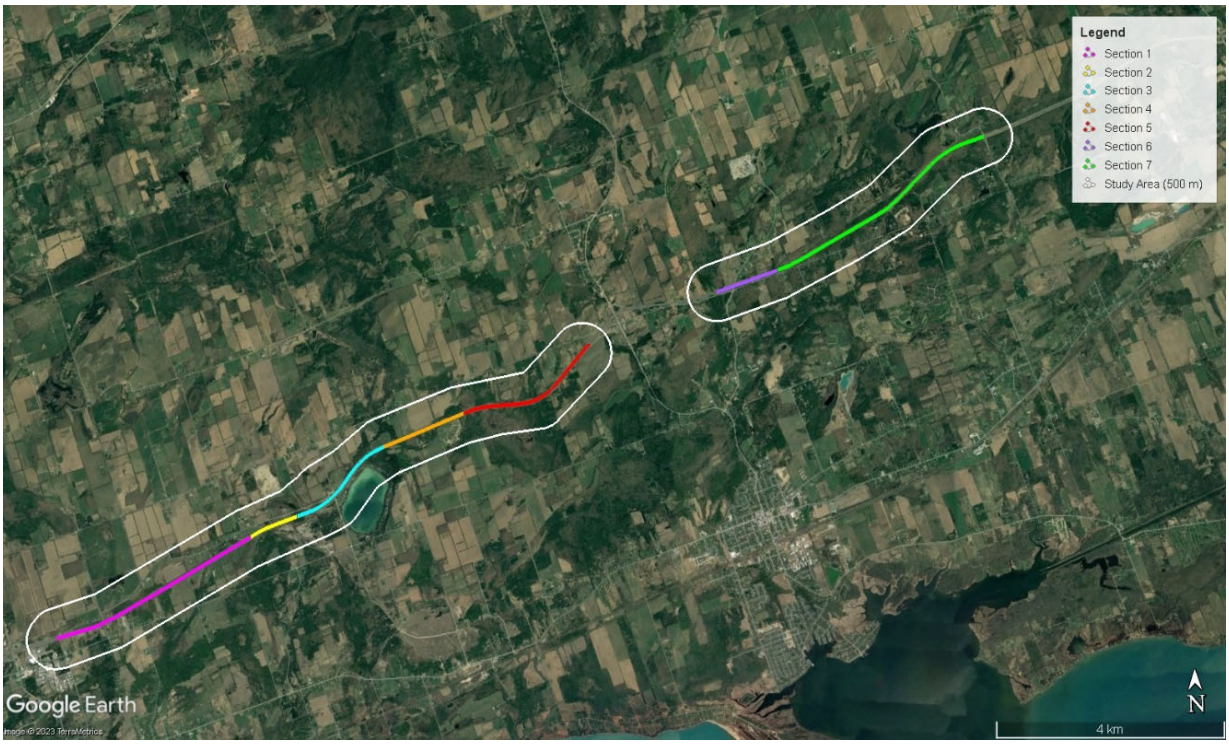


Figure 1-1 Study Area

2 METHODOLOGY

2.1 APPROACH

The AQIA follows methodology outlined in the MTO Guide for Group 'B' projects (major improvements to existing transportation facilities). The MTO Guide provides guidance on assessment methodologies that can be applied to AQIA for transportation related projects. Based on the nature and complexity of the project, a quantitative assessment was completed. The AQIA provides a summary of the existing local air quality conditions, identifies nearby sensitive receptors, and quantifies emission estimates and impacts of existing, future build, and future no-build traffic scenarios (including greenhouse gases (GHG)). The assessment will also discuss the potential air quality impacts that could arise from the Project during construction and operation and identifies recommended mitigation measures that could be utilized to minimize impacts.

The main objectives of this AQIA are to:

- Define the Study Area;
- Identify sensitive receptors in the Study Area;
- Establish existing conditions in the Study Area;
- Compare the existing ambient air quality data in the vicinity of the Project to applicable provincial and federal air quality thresholds;
- Identify emission sources from surrounding industrial activities;
- Calculate emission estimates based on existing, future build, and future no-build traffic scenarios and data;
- Evaluate maximum concentrations of evaluated contaminants and potential impacts on surrounding receptors;
- Discuss potential air quality impacts including consideration for climate change (as greenhouse gases (GHG)) that could arise from the Project during construction and operation;
- Compare regional greenhouse gas impacts from the Project to the regional and provincial GHG totals; and,
- Discuss potential mitigation measures, if required.

2.2 CONTAMINANTS OF CONCERN

The assessment of air quality in the Study Area focused on criteria air contaminants (CACs) and other contaminants that are expected to be released from the vehicle emissions. These contaminants are emitted from fuel combustion and from vehicles travelling on roadways. The air contaminants selected for this project were identified as per the MTO Guide and include the following:

- Particulate matter less than 10 microns in diameter (PM_{10});
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$);
- Nitrogen oxides expressed as nitrogen dioxide (NO_2);
- Carbon monoxide (CO);
- 1,3-Butadiene;
- Acetaldehyde;
- Acrolein;
- Benzene;
- Formaldehyde; and,

— Benzo(a)pyrene (B(a)P).

Volatile organic compounds (VOCs) were assessed using 1,3-butadiene, acetaldehyde, acrolein, benzene, and formaldehyde as surrogates, and benzo(a)pyrene as a surrogate for polycyclic aromatic hydrocarbons (PAHs).

2.3 AIR QUALITY INDICATORS

The ambient air contaminant concentrations will be compared to the applicable Canadian Ambient Air Quality Standards (CAAQS) created by the Canadian Council of Ministers of the Environment (CCME) and the Ministry of the Environment, Conservation and Parks (MECP) Ontario Ambient Air Quality Criteria (AAQC).

The CAAQS and AAQC are referred to as "air quality indicators" in this AQIA. Predicted concentrations of each contaminant were compared to applicable criteria or standard for each contaminant and averaging period. **Table 2-1** outlines the applicable air quality objective for each contaminant assessed in this study. A value above an air quality indicator does not indicate a concern but is used to describe the air quality qualitatively. They are typically used in Ontario as an 'indicator of good air quality' (MECP, 2020).

Table 2-1 Applicable Air Quality Indicators

CONTAMINANT	AVERAGING PERIOD	CAAQS[1] (µg/m^3)	AAQC[2] (µg/m^3)	EXPLANATION FOR THRESHOLD
PM_{10}	24 h	—	50	3-year average of the most recent consecutive annual 98th percentile of the daily 24-hour average concentrations – converted from $PM_{2.5}$
$PM_{2.5}$	24 h	**27**	27	3-year average of the most recent consecutive annual 98th percentile of the daily 24-hour average concentrations
	Annual	**8.8**	8.8	3-year average of the most recent consecutive annual average of all 1-hour concentrations
NO_2	1 h	**79 (2025)** 113 (2020)	400	3-year average of the most recent consecutive annual 98th percentile of the daily maximum 1-hour average concentrations
	24 h	—	200	5-year average of 90th percentile
	Annual	**23 (2025)** 32 (2020)	—	5-year average of the most recent consecutive annual average of all 1-hour averages
CO	1 h	—	36,200	5-year average of 90th percentile
	8 h	—	15,700	5-year average of 90th percentile
1,3-Butadiene	24 h	—	10	5-year average of 90th percentile
	Annual	—	2	5-year average of 24-hour concentrations converted to an annual averaging period
Acetaldehyde	30 min	—	500	5-year average of 24-hour concentrations converted to a 30 min averaging period

CONTAMINANT	AVERAGING PERIOD	CAAQS[1] (µg/m^3)	AAQC[2] (µg/m^3)	EXPLANATION FOR THRESHOLD
	24 h	—	500	5-year average of 90th percentile
Acrolein	1 h	—	4.5	5-year average of 90th percentile
	24 h	—	0.4	5-year average of 90th percentile
Benzene	24 h	—	2.3	5-year average of 90th percentile
	Annual	—	0.45	5-year average of 24-hour concentrations converted to an annual averaging period
Formaldehyde	24 h	—	65	5-year average of 90th percentile
Benzo(a)pyrene	24 h	—	0.00005	5-year average of 90th percentile
	Annual	—	0.00001	5-year average of 24-hour concentrations converted to an annual averaging period

Notes:
[1] CAAQS obtained from the Canadian Council of Ministers of the Environment (CCME). 2022.
[2] AAQC obtained from the Ontario Ministry of the Environment, Conservation and Parks (MECP). 2020. Ambient Air Quality Criteria publication.
Bold – indicates that the value was used as the applicable Project threshold.

3 EXISTING AIR QUALITY

The background air quality in the Study Area has been described by considering regional concentrations based on publicly available historical ambient air monitoring data. The background air quality represents the existing conditions of air quality before the implementation of the proposed Project. Sources contributing to the existing air quality conditions include industrial activities, roadways, long-range transboundary air pollution, and small regional sources.

3.1 METEOROLOGICAL DATA AND AMBIENT MONITORING STATIONS

The concentrations of the selected contaminants for this assessment resulting from background sources were estimated by analyzing historical monitoring data from Environment and Climate Change Canada (ECCC) National Air Pollution Surveillance (NAPS) stations and the MECP air monitoring stations in the vicinity of the Study Area. Consideration was given to assess the representativeness of the data for the stations selected for use in this assessment. Publicly available data was obtained from these stations for the latest available years and excludes data that has not been through rigorous quality assurance and quality control (QA/QC) or may have been influenced by COVID-19, as such, 2019 is the most recent year of data presented in this assessment.

As part of the analysis for prevailing wind direction (showing the direction the winds are “blowing from”) in the vicinity of the Study Area were reviewed. **Figure 3-1** presents the wind rose data for the closest and most representative station for the ECCC Station #6158875 located in Trenton, Ontario, approximately 4 km east southwest of the Study Area.

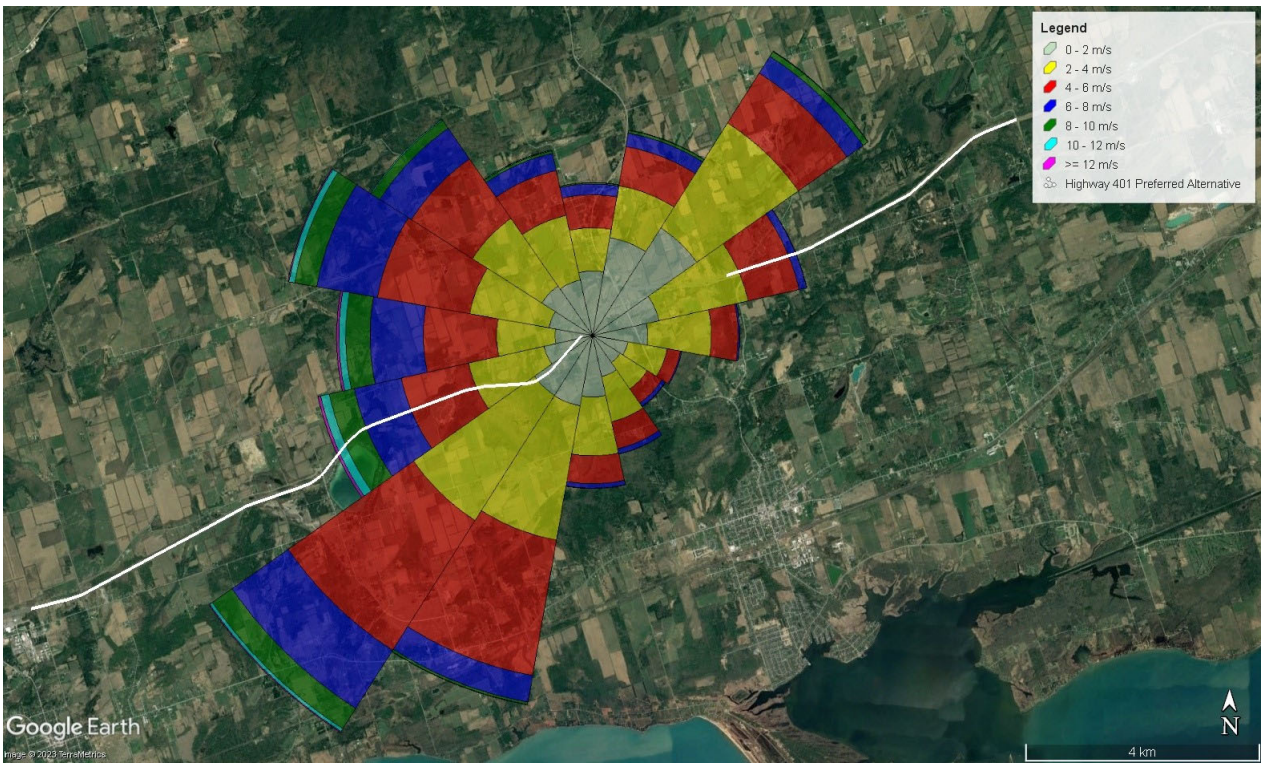


Figure 3-1 Trenton Wind Rose (blowing from)

The time period for the background data varies for each contaminant based on the availability of quality assured data from ECCC and the MECP. Representative stations based on their surrounding land use, proximity to similar sources and proximity to the Study Area were selected to use as existing background. The representative station information, contaminants monitored, period of analysis and distance from the Study Area are listed in **Table 3-1**. Multiple stations were required due to some contaminants not being measured at the closest station or due to stations not being located in geographically or representative locations. The location of the selected stations is presented in **Figure 3-2**.

Table 3-1 Air Monitoring Stations and Data Availability for Selected Contaminants

STATION NAME	NAPS STATION ID	DATA AVAILABLE							YEARS OF DATA AVAILABLE	DISTANCE FROM PROJECT (KM)
		$PM_{2.5}$	CO	NO_x	B(a)P	Benzene, 1,3-Butadiene	Acetalde-hyde, Formalde-hyde	Acrolein		
Belleville Wastewater Treatment Plant	65401	**Y**	N	**Y**	N	N	N	N	2013-2019	24 ENE
Eagle St. & Mccaffrey Road Newmarket	65101	Y	N	Y	N	**Y**	N	N	2013-2019	126 W
401 West-Toronto	60438	Y	**Y**	Y	**Y**[2]	Y	**Y**[1]	**Y**[1]	2017-2019	136 WSW

Notes:
[1] Due to data availability from the 401 W – Toronto station (60438), three years of data were available for B(a)P, carbon monoxide, acetaldehyde and formaldehyde from 2017-2019.
[2] Due to data availability from the 401 W – Toronto station (60438), two years of data were available for acrolein from 2017-2018.
Bold indicates that the station was selected to provided representative data for the applicable contaminant

Figure 3-2 Location of Ambient Monitoring Stations

The 90th percentile background concentration for each contaminant was calculated using data from the stations listed in **Table 3-1**. Concentrations recorded above the 90th percentile were considered outliers and were removed from calculations to avoid extreme, rare, and transient events. For contaminants with an AAQC threshold, the 90th percentile over the five-year data set is considered the most representative of ambient background conditions for averaging periods of 30 minutes, one hour, eight hours, and 24 hours. For contaminants with an annual averaging period, the 5-year average of 24-hour average converted to an annual averaging period was used. For contaminants with a CAAQS threshold, the 98th percentile over a three-year data set was used for a 24-hour averaging period and a three-year annual average was used.

There is no monitoring data available for PM_{10}, however, an approximation of the background PM_{10} concentrations can be estimated from the available $PM_{2.5}$ monitoring results. $PM_{2.5}$ is a subset of PM_{10}. Therefore, it is reasonable to assume that the ambient concentrations of PM_{10} concentrations will be greater than the corresponding levels of $PM_{2.5}$. The mean levels of $PM_{2.5}$ in Canadian locations are found to be about 54% of the PM_{10} concentrations (Lall et al. 2004). By applying this ratio, it is possible to estimate the background suspended particulate matter (SPM) and PM_{10} concentrations for the study area.

Table 3-2 summarizes the background concentrations representative of the Study Area, and the associated ambient air quality criteria.

Table 3-2 Summary of Ambient Background Concentrations

CONTAMINANT	AVERAGING PERIOD	BACKGROUND CONCENTRATION (µg/m³)	AIR QUALITY CRITERIA (µg/m³)	% OF AIR QUALITY CRITERIA
PM_{10}[1]	24 h	26	50	51%
$PM_{2.5}$	24 h	15	27	57%

CONTAMINANT	AVERAGING PERIOD	BACKGROUND CONCENTRATION (µg/m³)	AIR QUALITY CRITERIA (µg/m³)	% OF AIR QUALITY CRITERIA
	Annual	6	8.8	69%
NO_2	1 h	38	79	48%
	24 h	15	200	8%
	Annual	8	23	37%
CO	1 h	607	36,200	2%
	8 h	494	15,700	3%
Acrolein	1 h	0.18[2]	4.5	4%
	24 h	0.08	0.4	19%
Benzene	24 h	0.56	2.3	24%
	Annual	0.07	0.45	15%
1,3-Butadiene	24 h	0.04	10	0.4%
	Annual	0.004	2	0.2%
Acetaldehyde	30 min	8.9[3]	500	2%
	24 h	3.0	500	0.6%
Formaldehyde	24 h	2.7	65	4%
Benzo(a)pyrene (B(a)P)	24 h	**1.52E-04**	0.00005	**304%**
	Annual	**1.61E-05**	0.00001	**161%**

Notes:

[1] PM10 = PM2.5 / 0.56. References: Lall et al., 2004 ("Estimation of historical annual PM2.5 exposures for health effects assessment published in the Journal of Atmospheric Environment)

[2] The 1-hour concentration was converted from the 24-hour concentration. Reference: Ontario Ministry of the Environment, Conservation, and Parks, 2018 ("Procedure for Preparing an Emission Summary and Dispersion Modelling Report")

[3] The 30-minute concentration was converted from the 24-hour concentration. Reference: Ontario Ministry of the Environment, Conservation, and Parks, 2018 ("Procedure for Preparing an Emission Summary and Dispersion Modelling Report")

X – value is greater than the air quality indicator

The air quality objectives listed in **Table 3-2** represent desirable levels of contaminants in ambient air and are not enforceable within any jurisdiction; they represent a 'road map' for ambient air quality provincially and federally.

Based on existing ambient data presented in **Table 3-2**, the existing air quality is good as the air quality criteria, with the exception of B(a)P, are met for the indicator contaminants selected for this assessment. The available background B(a)P data is limited and is consistent with levels founds across Ontario (Tevlin et al., 2020).

3.2 SENSITIVE AND CRITICAL RECEPTORS

As outlined in the MTO Guide, critical receptors (i.e., retirement homes, hospitals, childcare centres, schools, and similar institutional buildings) and sensitive receptors (i.e., residential dwellings) within a 500 m of the preferred

alternative were identified in the assessment. The area surrounding the Project is comprised primarily of rural residential, agricultural and open space land use types. Sensitive receptors (i.e., residential dwellings) on both the south and north sides within 500 m of the preferred alternative have been identified within the Study Area of the Project, as shown in **Figure 3-3**.

Figure 3-3 Location of Surrounding Sensitive Receptors

3.3 SURROUNDING INDUSTRIAL AND COMMERCIAL FACILITIES

Nearby industrial facilities have the potential to impact existing air quality conditions surrounding the Study Area. A review of National Pollutant Release Inventory (NPRI) data from 2021, which corresponds to the latest available year with data that has been quality assured by ECCC, indicates that no major facilities have been identified within the 5 km of Study Area which may contribute to existing air quality conditions. Additional facilities within the Study Area were also identified following review of the Environmental Registry of Ontario (ero.ontario.ca). These facilities operate with an Environmental Compliance Approval (ECA) for air emissions or are registered with the Environmental Activity and Sector Registry (EASR) and would also contribute to existing air quality conditions. Facilities with air emissions surrounding the Study Area including the following:

- Storrak Ltd.;
- Canada Colours and Chemicals Ltd.;
- CRH Canada Group Ltd.;
- Hoselton Studio Limited;
- Superior Flexible Conduits Inc.; and,
- Tri County Plastics.

3.4 EXISTING VEHICLE EMISSIONS

There are also several sources of air emissions from vehicular travel in the air quality Study Area. Vehicle emission for the existing (2022) scenario are discussed within the Project emissions section.

4 PROJECT AIR QUALITY IMPACTS

A quantitative AQIA was completed for the ultimate widening conditions as this is considered to be the worst-case scenario in terms of air quality impacts due to higher traffic volumes and emission sources being closer to sensitive receptors when compared to the interim widening.

4.1 VEHICLE EMISSIONS

There are several sources of air emissions from vehicular travel in the air quality Study Area. Vehicle emission rates were calculated for the existing (2022), and future (2041) scenarios for the Project build (Ultimate Widening)and without the Project build For ease of review, given the same methodology is used to assess the existing vehicular emissions, they are presented within this section. The ultimate widening conditions (8 lanes) are considered to represent the worst-case scenario in terms of air quality impacts due to higher traffic volumes and emission sources being closer to sensitive receptors when compared to the interim widening (6 lanes). A qualitative assessment of the interim widening conditions is presented in Section 6.2

4.2 TRAFFIC DATA IN THE STUDY AREA

The WSP transportation team provided 2016 and 2041 road traffic volumes in the form of Annual Average Daily Traffic (AADT) and Summer Average Daily Traffic (SADT). The SADT values were used in the AQIA to allow for a more conservative scenario to be evaluated. Existing SADT values for 2022 were estimated using the 2016 SADT values and an annual growth rate of 1%. A summary of 2022 and 2041 traffic data in the Study Area is presented in **Table A1-1** to **Table A3-3** of **Appendix A**.

4.3 VEHICLE EMISSION RATES

4.3.1 PASSENGER VEHICLE AND TRUCKS

Vehicle emission rates for the existing (2022) and future (2041) conditions were estimated using the US EPA Motor Vehicle Emission Simulator (MOVES), version MOVES3, released November 10, 2020, which is the latest motor vehicle emission estimate model, and is approved and recommended for use by the MTO and the MECP. The MOVES model allows for coverage of multiple geographic scales and can generate emission estimates for various time periods (hour, day, month, and year). Emission rates for the assessment were estimated using Summer Average Daily Traffic (SADT) data, default vehicle fleet age distribution and emissions inspection and maintenance, and fuel properties were adjusted to reflect the geographic area of the Project (Ontario). Percentage of passenger vehicles and trucks, heavy trucks, and medium trucks for each road segment were provided by the WSP transportation team. In the absence of reliable published data on the fleet composition, it is assumed that both the existing and future fleet vehicles are running on conventional fuels and no reductions for use of hybrid vehicles or electric vehicles has been applied to the emission factors calculated. This will lead to some overprediction of the emissions from the vehicles. Emission rates for resuspended particulate matter were calculated separately using US EPA emission factors and were added to the MOVES outputs. MOVES option selections are presented in **Table A-4** and emission rates are presented in **Table A-5** of **Appendix A**.

4.4 VEHICLE EMISSION IMPACTS

The vehicle emission impacts were predicted using air dispersion modelling. The emissions from the vehicles travelling on the roads were characterized as line volume sources and sized to correspond to the width of the road and expected average height of the vehicles that may be travelling along the road corridor. The source data required for each road source was calculated using the road type, width of the road and height of the vehicle according to the procedures provided in the Air Dispersion Modelling Guideline for Ontario (ADMGO).

A detailed summary of dispersion modelling inputs is provided in **Table B-1** and **Table B-2** of **Appendix B**.

4.4.1 DISPERSION MODEL USED

The AERMOD dispersion model, version 19191, was selected to predict concentrations in the Study Area. The AERMOD model has been identified by the US EPA as the model to replace other dispersion models to complete mobile source dispersion modelling. AERMOD is applicable for assessing dispersion accommodating rural and urban areas, flat and complex terrain, surface and elevated releases and multiple source types (including point, area, and volume sources). The AERMOD modelling system consists of the AERMOD dispersion model, the AERMET meteorological pre-processor and the AERMAP terrain pre-processor.

For this assessment, the MECP five-year Central Region rural meteorological data set (AERMET – Version 19191) was used. Note, that the rural vs. urban dispersion coefficient within the AERMOD model was set to "Rural" to reflect the population density and land use surrounding the site.

Each of the seven sections of the Project were modelled separately in AERMOD. The area of modelling coverage was centered around the Study Area and discrete receptors were placed at representative sensitive receptors within the Study Area. Terrain elevations in the Study Area was obtained from the MECP Ontario Digital Elevation Model data web site. The terrain data is based on the North American Datum 1983 (NAD83) horizontal reference datum, cdem_dem_031M.tif, Belleville, UTM Zone 18.

4.4.2 DISPERSION MODELLING METHOD

A contaminant negligibility assessment was completed to assess contaminants with potential impacts to be included in the air dispersion modelling assessment. The negligibility assessment was based on the procedures outlined in the ADMGO. Dispersion factors were determined based on a 20 m distance from road sources to sensitive receptors. Contaminants included in the negligibility assessment are presented in **Table B-3** of **Appendix B**. Based on the negligibility assessment, a total of eight (8) contaminants were determined to be significant, as shown below:

- Particulate matter less than 2.5 µm in diameter ($PM_{2.5}$);
- Particulate matter less than 10 µm in diameter (PM_{10});
- Nitrogen Oxides (as NO_2);
- Acrolein;
- Formaldehyde;
- Benzo(a)pyrene;
- Carbon Monoxide; and,
- Benzene.

Transportation sources were modelled as line volume sources. All sources were set to be operating 24 hours/day, 7 days/week, 52 weeks/year in the modelling assessment. Contaminants that were deemed negligible in terms of the impact from the Project (Full-Build or No Build), including 1,3-butadiene and acetaldehyde are presented in a **Table 4-1** comparing the emissions rate changes from 2022 to 2041 in comparison to the increase in SADT. Results of the assessment are presented in the next section of this report.

5 RESULTS

5.1 AIR QUALITY IMPACTS

The air dispersion modelling results for the contaminants of concern for the highest predicted concentration in the Study Area are reported in this section. A comparison between future full build and no build scenarios is used to determine the impact of the Project on local air quality. When applicable, a comparison to the existing 2022 predicted vehicle emissions is also included.

This section includes predicted results for the following two scenarios:

- Full Build Scenario: 2041 horizon (future scenario) with Project (ultimate 8 lane widening); and,
- No Build Scenario: 2041 horizon (future scenario) without Project.

The results for each scenario were evaluated at modelled receptors in the Study Area. The results for the most impacted receptor for each section are presented below. The locations of the most impacted receptors for the Project full build scenario are presented in **Table 5-1**.

Table 5-1 Most Impacted Receptor for Full Build Scenario

Road Section	$PM_{2.5}$ 24-hour	$PM_{2.5}$ Annual	NOx 1-hour	NOx 24-hour	NOx Annual
Section 1	315 Crandall Road	315 Crandall Road	411 Crandall Road	315 Crandall Road	315 Crandall Road
Section 2	550 Crandall Road	550 Crandall Road	411 Crandall Road	550 Crandall Road	550 Crandall Road
Section 3	29 McDonald Road	51 McDonald Road	29 McDonald Road	29 McDonald Road	51 McDonald Road
Section 4	248 Cochrane Road				
Section 5	15165 Telephone Road				
Section 6	627 County Road 26	627 County Road 26	15773 Telephone Road	627 County Road 26	627 County Road 26
Section 7	16038 Telephone Road	16038 Telephone Road	102 Coltman Road	16038 Telephone Road	16038 Telephone Road

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.

Cumulative impacts presented reflect the existing concentrations and the predicted impacts from 2022 to 2041. The cumulative impacts were compared to air quality thresholds and are presented in **Table 5-2** to **Table 5-15**. Modelling contour figures can be found in **Appendix C**. For contaminants deemed negligible for the air dispersion modelling assessment, a comparison of 2022 and 2041 emission rates and SADT is provided in **Table 5-16** and **Table 5-17**.

Table 5-2 Summary of Impacts to the Study Area – Section 1 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	3.6	30	59%
$PM_{2.5}$	24-hr	27	15	0.5	15	57%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-3.4	32	8%
	24-hr	200	15	-1.4	14	7%
	Annual	23	8	-0.3	8	34%
Carbon Monoxide	1-hr	36,200	607	-141	466	1%
	8-hr	15,700	494	-84	410	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.01	0.07	19%
Benzene	24-hr	2.3	0.56	-0.03	0.53	23%
	Annual	0.45	0.07	-0.01	0.06	14%
Formaldehyde	24-hr	65	2.7	-0.08	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.42E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-2.98E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 315 Crandall Road and 411 Crandall Road.

Table 5-3 Summary of Impacts to the Study Area – Section 1 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	3.1	29	58%
$PM_{2.5}$	24-hr	27	15	0.4	15	57%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-3.3	32	8%
	24-hr	200	15	-1.3	14	7%
	Annual	23	8	-0.3	8	34%
Carbon Monoxide	1-hr	36,200	607	-139	468	1%
	8-hr	15,700	494	-86	408	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.01	0.07	19%
Benzene	24-hr	2.3	0.56	-0.03	0.53	23%
	Annual	0.45	0.07	-0.01	0.06	14%
Formaldehyde	24-hr	65	2.7	-0.08	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.44E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-2.95E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 315 Crandall Road and 411 Crandall Road.

Table 5-4 Summary of Impacts to the Study Area – Section 2 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	2.6	29	57%
$PM_{2.5}$	24-hr	27	15	0.4	15	57%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-2.7	32	8%
	24-hr	200	15	-0.9	14	7%
	Annual	23	8	-0.2	8	34%
Carbon Monoxide	1-hr	36,200	607	-118	489	1%
	8-hr	15,700	494	-64	430	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.004	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	23%
	Annual	0.45	0.07	-0.004	0.07	15%
Formaldehyde	24-hr	65	2.7	-0.05	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.13E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-2.14E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 411 Crandall Road and 550 Crandall Road.

Table 5-5 Summary of Impacts to the Study Area – Section 2 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	2.6	29	57%
$PM_{2.5}$	24-hr	27	15	0.4	15	57%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-2.4	33	8%
	24-hr	200	15	-0.9	14	7%
	Annual	23	8	-0.2	8	34%
Carbon Monoxide	1-hr	36,200	607	-113	494	1%
	8-hr	15,700	494	-62	432	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.004	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	23%
	Annual	0.45	0.07	-0.004	0.07	15%
Formaldehyde	24-hr	65	2.7	-0.05	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.13E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-2.16E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 411 Crandall Road and 550 Crandall Road.

Table 5-6 Summary of Impacts to the Study Area – Section 3 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD (µg/m³)	BACKGROUND CONCENTRATION (µg/m³)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 (µg/m³)	2041 CUMULATIVE CONCENTRATION (µg/m³)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	0.1	26	52%
$PM_{2.5}$	24-hr	27	15	-0.4	15	54%
	Annual	8.8	6.1	-0.1	6.0	68%
NO_2	1-hr	400	35	-6.3	29	7%
	24-hr	200	15	-2.1	13	6%
	Annual	23	8	-0.5	7	32%
Carbon Monoxide	1-hr	36,200	607	-202	405	1%
	8-hr	15,700	494	-131	363	2%
Acrolein	1-hr	4.5	0.18	-0.02	0.16	4%
	24-hr	0.4	0.08	-0.01	0.07	18%
Benzene	24-hr	2.3	0.56	-0.03	0.53	23%
	Annual	0.45	0.07	-0.01	0.06	14%
Formaldehyde	24-hr	65	2.7	-0.08	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.63E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-4.19E-08	**1.61E-05**	**161%**

Note:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 29 McDonald Road and 51 McDonald Road.

Table 5-7 Summary of Impacts to the Study Area – Section 3 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	3.8	30	60%
$PM_{2.5}$	24-hr	27	15	0.5	16	57%
	Annual	8.8	6.1	0.1	6.2	71%
NO_2	1-hr	400	35	-3.7	31	8%
	24-hr	200	15	-1.3	14	7%
	Annual	23	8	-0.3	8	33%
Carbon Monoxide	1-hr	36,200	607	-158	449	1%
	8-hr	15,700	494	-102	392	2%
Acrolein	1-hr	4.5	0.18	-0.02	0.16	4%
	24-hr	0.4	0.08	-0.01	0.07	19%
Benzene	24-hr	2.3	0.56	-0.03	0.53	23%
	Annual	0.45	0.07	-0.01	0.06	14%
Formaldehyde	24-hr	65	2.7	-0.08	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.47E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-3.78E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 18, McDonald Road, 29 McDonald Road and 51 McDonald Road.

Table 5-8 Summary of Impacts to the Study Area – Section 4 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	2.5	28	57%
$PM_{2.5}$	24-hr	27	15	0.4	15	57%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-1.6	33	8%
	24-hr	200	15	-0.8	14	7%
	Annual	23	8	-0.2	8	34%
Carbon Monoxide	1-hr	36,200	607	-70	537	1%
	8-hr	15,700	494	-44	450	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.003	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	24%
	Annual	0.45	0.07	-0.004	0.07	15%
Formaldehyde	24-hr	65	2.7	-0.05	2.7	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-8.67E-08	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-1.83E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptor is 248 Cochrane Road.

Table 5-9 Summary of Impacts to the Study Area – Section 4 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	2.3	28	57%
$PM_{2.5}$	24-hr	27	15	0.3	15	57%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-1.7	33	8%
	24-hr	200	15	-0.8	14	7%
	Annual	23	8	-0.2	8	34%
Carbon Monoxide	1-hr	36,200	607	-71	536	1%
	8-hr	15,700	494	-45	449	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.003	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	24%
	Annual	0.45	0.07	-0.004	0.07	15%
Formaldehyde	24-hr	65	2.7	-0.05	2.7	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-8.76E-08	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-1.85E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptor is 248 Cochrane Road.

Table 5-10 Summary of Impacts to the Study Area – Section 5 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	1.9	28	56%
$PM_{2.5}$	24-hr	27	15	0.2	15	56%
	Annual	8.8	6.1	0.1	6.2	70%
NO_2	1-hr	400	35	-1.8	33	8%
	24-hr	200	15	-0.8	14	7%
	Annual	23	8	-0.1	8	34%
Carbon Monoxide	1-hr	36,200	607	-73	534	1%
	8-hr	15,700	494	-45	449	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.003	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	24%
	Annual	0.45	0.07	-0.002	0.07	15%
Formaldehyde	24-hr	65	2.7	-0.04	2.7	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-8.01E-08	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-1.15E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptor is 15165 Telephone Road.

Table 5-11 Summary of Impacts to the Study Area – Section 5 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	2.0	28	56%
$PM_{2.5}$	24-hr	27	15	0.3	15	57%
	Annual	8.8	6.1	0.04	6.1	70%
NO_2	1-hr	400	35	-1.7	33	8%
	24-hr	200	15	-0.7	14	7%
	Annual	23	8	-0.1	8	34%
Carbon Monoxide	1-hr	36,200	607	-71	536	1%
	8-hr	15,700	494	-44	450	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.003	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	24%
	Annual	0.45	0.07	-0.002	0.07	15%
Formaldehyde	24-hr	65	2.7	-0.04	2.7	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-7.94E-08	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-1.20E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptor is 15165 Telephone Road.

Table 5-12 Summary of Impacts to the Study Area – Section 6 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	4.4	30	61%
$PM_{2.5}$	24-hr	27	15	0.7	16	58%
	Annual	8.8	6.1	0.2	6.3	71%
NO_2	1-hr	400	35	-1.6	33	8%
	24-hr	200	15	-0.9	14	7%
	Annual	23	8	-0.2	8	34%
Carbon Monoxide	1-hr	36,200	607	-76	531	1%
	8-hr	15,700	494	-60	434	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.005	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	23%
	Annual	0.45	0.07	-0.005	0.07	14%
Formaldehyde	24-hr	65	2.7	-0.07	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.20E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-2.41E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 627 County Road 26 and 15773 Telephone Road.

Table 5-13 Summary of Impacts to the Study Area – Section 6 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	4.4	30	61%
$PM_{2.5}$	24-hr	27	15	0.7	16	58%
	Annual	8.8	6.1	0.1	6.2	71%
NO_2	1-hr	400	35	-1.6	33	8%
	24-hr	200	15	-0.9	14	7%
	Annual	23	8	-0.2	8	34%
Carbon Monoxide	1-hr	36,200	607	-77	530	1%
	8-hr	15,700	494	-59	435	3%
Acrolein	1-hr	4.5	0.18	-0.01	0.17	4%
	24-hr	0.4	0.08	-0.005	0.08	19%
Benzene	24-hr	2.3	0.56	-0.02	0.54	23%
	Annual	0.45	0.07	-0.005	0.07	14%
Formaldehyde	24-hr	65	2.7	-0.07	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.20E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-2.42E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 627 County Road 26 and 15773 Telephone Road.

Table 5-14 Summary of Impacts to the Study Area – Section 7 Full Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	6.7	33	65%
$PM_{2.5}$	24-hr	27	15	1.2	16	60%
	Annual	8.8	6.1	0.3	6.4	73%
NO_2	1-hr	400	35	-3.3	32	8%
	24-hr	200	15	-1.2	14	7%
	Annual	23	8	-0.3	8	34%
Carbon Monoxide	1-hr	36,200	607	-161	446	1%
	8-hr	15,700	494	-91	403	3%
Acrolein	1-hr	4.5	0.18	-0.02	0.16	4%
	24-hr	0.4	0.08	-0.01	0.07	18%
Benzene	24-hr	2.3	0.56	-0.03	0.53	23%
	Annual	0.45	0.07	-0.01	0.06	14%
Formaldehyde	24-hr	65	2.7	-0.09	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.67E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-3.96E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 16038 Telephone Road and 102 Coltman Road.

Table 5-15 Summary of Impacts to the Study Area – Section 7 No Build

CONTAMINANT	AVERAGING PERIOD	AIR QUALITY THRESHOLD ($\mu g/m^3$)	BACKGROUND CONCENTRATION ($\mu g/m^3$)	PREDICTED CONCENTRATION IMPACT 2041 - 2022 ($\mu g/m^3$)	2041 CUMULATIVE CONCENTRATION ($\mu g/m^3$)	CUMULATIVE PERCENT OF AIR QUALITY THRESHOLD
PM_{10}	24-hr	50	26	6.3	32	65%
$PM_{2.5}$	24-hr	27	15	1.1	16	59%
	Annual	8.8	6.1	0.3	6.4	72%
NO_2	1-hr	400	35	-3.3	32	8%
	24-hr	200	15	-1.3	14	7%
	Annual	23	8	-0.3	8	33%
Carbon Monoxide	1-hr	36,200	607	-161	446	1%
	8-hr	15,700	494	-95	399	3%
Acrolein	1-hr	4.5	0.18	-0.02	0.16	4%
	24-hr	0.4	0.08	-0.01	0.07	18%
Benzene	24-hr	2.3	0.56	-0.03	0.53	23%
	Annual	0.45	0.07	-0.01	0.06	14%
Formaldehyde	24-hr	65	2.7	-0.09	2.6	4%
Benzo(a)pyrene	24-hr	0.00005	**1.52E-04**	-1.69E-07	**1.52E-04**	**304%**
	Annual	0.00001	**1.61E-05**	-4.08E-08	**1.61E-05**	**161%**

Notes:
Concentrations of PM_{10}, benzene, formaldehyde, and benzo(a)pyrene were predicted by using MOVES emission rate ratios and scaling $PM_{2.5}$ modelling results. Concentrations of carbon monoxide and acrolein were predicted by using MOVES emission rate ratios and scaling NOx modelling results.
X – value is greater than the air quality indicator
The most impacted sensitive receptors include 16038 Telephone Road and 102 Coltman Road.

Table 5-16 Vehicle Emission Rates for 2022 and 2041

CONTAMINANT	EXISTING EMISSIONS (2022)		FUTURE EMISSIONS (2041)		2022-2041 PERCENT CHANGE (+/-)	
	HIGHWAY 401 EB (g/s)	HIGHWAY 401 WB (g/s)	HIGHWAY 401 EB (g/s)	HIGHWAY 401 WB (g/s)	HIGHWAY 401 EB (g/s)	HIGHWAY 401 WB (g/s)
Section 1						
Acetaldehyde	5.62E-04	7.06E-04	1.83E-04	2.38E-04	-67%	-66%
1,3-Butadiene	4.61E-05	5.27E-05	0.00E+00	0.00E+00	-100%	-100%
Section 2						
Acetaldehyde	1.33E-04	1.35E-04	4.33E-05	4.37E-05	-67%	-68%
1,3-Butadiene	1.09E-05	1.11E-05	0.00E+00	0.00E+00	-100%	-100%
Section 3						
Acetaldehyde	2.96E-04	3.71E-04	9.62E-05	1.25E-04	-67%	-66%
1,3-Butadiene	2.43E-05	2.77E-05	0.00E+00	0.00E+00	-100%	-100%
Section 4						
Acetaldehyde	2.22E-04	2.79E-04	7.22E-05	9.41E-05	-67%	-66%
1,3-Butadiene	1.82E-05	2.08E-05	0.00E+00	0.00E+00	-100%	-100%
Section 5						
Acetaldehyde	4.14E-04	5.20E-04	1.35E-04	1.76E-04	-67%	-66%
1,3-Butadiene	3.40E-05	3.88E-05	0.00E+00	0.00E+00	-100%	-100%
Section 6						
Acetaldehyde	1.69E-04	2.14E-04	5.84E-05	7.65E-05	-66%	-64%
1,3-Butadiene	1.39E-05	1.60E-05	0.00E+00	0.00E+00	-100%	-100%
Section 7						
Acetaldehyde	6.49E-04	8.20E-04	2.24E-04	2.93E-04	-66%	-64%
1,3-Butadiene	5.32E-05	6.12E-05	0.00E+00	0.00E+00	-100%	-100%

5.2 GREENHOUSE GAS IMPACTS

Greenhouse gases (GHGs) are contributors to the radiative warming effect of the environment that results in global climate change. To assess the impact of the Project on GHG emissions, the GHG emissions from the No Build and Full Build Scenario (2041) were compared to existing conditions (2022).

The GHGs included in the assessment are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) which are emitted from fuel combustion and from other anthropogenic and natural sources. Carbon dioxide is the main product of combustion while the other two gases are by-products of incomplete combustion. Methane and nitrous oxide have lower concentrations in the atmosphere than carbon dioxide, but their potential impact on global warming potential (GWP) per molecule is larger than for carbon dioxide. The 100-year global warming potential (GWP) factors were used to convert the GHGs emissions into CO_2 equivalent (CO_2eq).

Existing (2022) and future (2041) CO_2, CH_4, and N_2O emission from vehicles were calculated using the MOVES3 emission model and converted to CO_2eq using GWP. Existing and future traffic volume changes are presented in **Table 5-17**. The annual GHG emission are presented in **Table 5-18** and are compared to the provincial GHG emission estimates in **Table 5-19**, which were obtained from the Canada Energy Regulator Provincial and Territorial Energy Profiles for Ontario.

In the absence of reliable published data on the fleet composition it is assumed that both the existing and future fleet vehicles are running on conventional fuels and no reductions for use of hybrid vehicles or electric vehicles has been applied to the emission factors calculated. As a result, emission rates are conservative.

Table 5-17 SADT Values for 2022 and 2041

ROAD SECTION ID	LOCATION	2022 SADT	2041 SADT	2022-2041 % CHANGE
1-A	Highway 401 EB (East of Percy St to West of Lake Rd)	29,321	36,200	23%
1-B	Highway 401 WB (East of Percy St to West of Lake Rd)	29,735	36,500	23%
2-A	Highway 401 EB (East of Segment 1 to West of Lake Rd)	29,321	36,200	23%
2-B	Highway 401 WB (East of Segment 1 to West of Lake Rd)	29,735	36,500	23%
3-A	Highway 401 EB (West of Lake Rd to West of Cochrane Rd)	29,321	36,200	23%
3-B	Highway 401 WB (West of Lake Rd to West of Cochrane Rd)	29,735	36,500	23%
4-A	Highway 401 EB (East of Segment 3 to East of Cochrane Rd)	29,321	36,200	23%
4-B	Highway 401 WB (East of Segment 3 to East of Cochrane Rd)	29,735	36,500	23%
5-A	Highway 401 EB (East of Cochrane Rd to West of County Road 30)	29,321	36,200	23%
5-B	Highway 401 WB (East of Cochrane Rd to West of County Road 30)	29,735	36,500	23%
6-A	Highway 401 EB (West of County Road 26 to West of County Road 26)	27,952	36,600	31%
6-B	Highway 401 WB (West of County Road 26 to West of County Road 26)	28,540	37,100	30%
7-A	Highway 401 EB (East of County Road 26 to Christiani Rd)	27,952	36,600	31%
7-B	Highway 401 WB (East of County Road 26 to Christiani Rd)	28,540	37,100	30%

Table 5-18 Total GHG Emissions (as CO_2eq) per Road Section

ROAD SECTION ID	2022 EMISSIONS (tonnes/year)	2041 NO BUILD EMISSIONS (tonnes/year)	2041 FULL BUILD EMISSIONS (tonnes/year)	2022-2041 NO BUILD EMISSIONS % CHANGE	2022-2041 FULL BUILD EMISSIONS % CHANGE
1-A	1.02E+04	9.65E+03	9.65E+03	-5.54%	-5.54%
1-B	1.13E+04	1.05E+04	1.05E+04	-6.49%	-6.49%
2-A	2.42E+03	2.29E+03	2.29E+03	-5.54%	-5.54%
2-B	2.45E+03	2.31E+03	2.31E+03	-6.08%	-6.08%
3-A	5.38E+03	5.08E+03	5.08E+03	-5.54%	-5.54%
3-B	5.94E+03	5.55E+03	5.55E+03	-6.49%	-6.49%
4-A	4.03E+03	3.81E+03	3.81E+03	-5.54%	-5.54%
4-B	4.45E+03	4.16E+03	4.16E+03	-6.49%	-6.49%
5-A	7.53E+03	7.11E+03	7.11E+03	-5.54%	-5.54%
5-B	8.31E+03	7.77E+03	7.77E+03	-6.49%	-6.49%
6-A	3.08E+03	3.08E+03	3.08E+03	0.18%	0.18%
6-B	3.42E+03	3.39E+03	3.39E+03	-0.97%	-0.97%
7-A	1.18E+04	1.18E+04	1.18E+04	0.18%	0.18%
7-B	1.31E+04	1.30E+04	1.30E+04	-0.97%	-0.97%

Table 5-19 Total GHG Emissions (as CO_2eq) Comparison to Provincial Total

ROAD SEGMENT ID	2022 EMISSIONS (tonnes/year)	2041 NO BUILD EMISSIONS (tonnes/year)	2041 FULL BUILD EMISSIONS (tonnes/year)	2020 PROVINCIAL EMISSIONS (tonnes/year) [A]	2041 NO BUILD (% OF PROVINCIAL TOTAL)	2041 FULL BUILD (% OF PROVINCIAL TOTAL)
1-A	1.02E+04	9.65E+03	9.65E+03	1.50E+08	0.01%	0.01%
1-B	1.13E+04	1.05E+04	1.05E+04		0.01%	0.01%
2-A	2.42E+03	2.29E+03	2.29E+03		<0.01%	<0.01%
2-B	2.45E+03	2.31E+03	2.31E+03		<0.01%	<0.01%
3-A	5.38E+03	5.08E+03	5.08E+03		<0.01%	<0.01%
3-B	5.94E+03	5.55E+03	5.55E+03		<0.01%	<0.01%
4-A	4.03E+03	3.81E+03	3.81E+03		<0.01%	<0.01%
4-B	4.45E+03	4.16E+03	4.16E+03		<0.01%	<0.01%
5-A	7.53E+03	7.11E+03	7.11E+03		<0.01%	<0.01%
5-B	8.31E+03	7.77E+03	7.77E+03		0.01%	0.01%
6-A	3.08E+03	3.08E+03	3.08E+03		<0.01%	<0.01%
6-B	3.42E+03	3.39E+03	3.39E+03		<0.01%	<0.01%
7-A	1.18E+04	1.18E+04	1.18E+04		0.01%	0.01%
7-B	1.31E+04	1.30E+04	1.30E+04		0.01%	0.01%

Notes:
[A] Canada Energy Regulator, Provincial and Territorial Energy Profiles – Ontario

Table 5-20 Total GHG Emissions (as CO_2eq) Comparison to Provincial Target

ROAD SEGMENT ID	2022 EMISSIONS (tonnes/year)	2041 NO BUILD EMISSIONS (tonnes/year)	2041 FULL BUILD EMISSIONS (tonnes/year)	2030 PROVINCIAL TARGET (tonnes/year) [A]	2041 NO BUILD (% OF PROVINCIAL TARGET)	2041 FULL BUILD (% OF PROVINCIAL TARGET)
1-A	1.02E+04	9.65E+03	9.65E+03	1.43E+08	0.01%	0.01%
1-B	1.13E+04	1.05E+04	1.05E+04		0.01%	0.01%
2-A	2.42E+03	2.29E+03	2.29E+03		<0.01%	<0.01%
2-B	2.45E+03	2.31E+03	2.31E+03		<0.01%	<0.01%
3-A	5.38E+03	5.08E+03	5.08E+03		<0.01%	<0.01%
3-B	5.94E+03	5.55E+03	5.55E+03		<0.01%	<0.01%
4-A	4.03E+03	3.81E+03	3.81E+03		<0.01%	<0.01%
4-B	4.45E+03	4.16E+03	4.16E+03		<0.01%	<0.01%
5-A	7.53E+03	7.11E+03	7.11E+03		<0.01%	<0.01%
5-B	8.31E+03	7.77E+03	7.77E+03		0.01%	0.01%
6-A	3.08E+03	3.08E+03	3.08E+03		<0.01%	<0.01%
6-B	3.42E+03	3.39E+03	3.39E+03		<0.01%	<0.01%
7-A	1.18E+04	1.18E+04	1.18E+04		0.01%	0.01%
7-B	1.31E+04	1.30E+04	1.30E+04		0.01%	0.01%

Notes:
[A] Climate Change: Ontario's Plan to Reduce Greenhouse Gas Emissions – Chapter 3.

6 DISCUSSION

6.1 ULTIMATE WIDENING

The predicted air quality concentrations from the vehicle emissions along each section of the preferred alternative were assessed at various receptors throughout the Study Area using the AERMOD air dispersion model. Significant air contaminants included in the modelling assessment were predicted to be below air quality thresholds for all averaging times for the future (2041) scenarios along each road section, except for B(a)P when assessed cumulatively. Existing concentrations of B(a)P are already above the respective air quality threshold; however, the available background B(a)P data is limited and is consistent with level founds across Ontario (Tevlin et al, 2020). Emission rates of B(a)P from vehicles are expected to decrease in the future as technology improves and the proportion of hybrid/electric vehicles increases. As a result, ambient concentrations of B(a)P are expected to decrease in the Study Area.

Modelling results showed an overall decrease in concentrations of NO_X, carbon monoxide, acrolein, benzene, formaldehyde, and B(a)P for the future (2041) full build scenario when compared to existing (2022) scenario. Since the Project is not expected to result in an increase in traffic volume to the Study Area, a decrease in concentrations of a similar magnitude was also noted for these contaminants for the future (2041) no build scenario. For contaminants deemed negligible (i.e., acetaldehyde and 1,3-butadiene) and not included in the air dispersion modelling assessment, all future emission rates are expected to decrease for all road sections.

Modelling results showed a slight increase in $PM_{2.5}$ and PM_{10} concentrations for the future (2041) full build and no build scenarios; however, the cumulative concentrations of these contaminants remain below their respective air quality threshold. An increase in particulate matter is expected as SADT increases since particulate matter emissions are associated with tailpipe emissions, brake wear, and tire wear. The $PM_{2.5}$ and PM_{10} concentration increase between the full build and no build scenarios are overall the same for each road section, with some marginal differences; however, overall the results show that the Project build would not have an adverse impact on air quality within the Study Area.

GHG emissions presented in **Table 5-18** show that annual emissions of GHGs from vehicles are expected to decrease from 2022 to 2041 on all road sections except for 6-A and 7-A; however, the resulting increase along these sections is marginal and much lower than the expected increase in SADT presented in **Table 5-17**. GHG emission estimates from all road sections are 0.01% or less of 2020 provincial GHG emission estimates as presented in **Table 5-19**, and 0.01% or less of the 2030 provincial target as shown in **Table 5-20**. Since no increase in traffic volume is expected from the Project, and GHG emissions from the Project no build and full build scenarios are the same, it can be concluded that the Project is not expected to have a significant impact on the regional and provincial GHG inventories or targets.

It should be noted that background concentrations already include existing emissions from the road sources which have been combined with predicted impacts of the Project. In the absence of reliable published data on the fleet composition it is assumed that both the existing and future fleet vehicles are running on conventional fuels and no reductions for use of hybrid vehicles or electric vehicles has been applied to the emission factors calculated. As a result, cumulative impacts are considered to be conservative.

It is predicted that overall air emission concentration and annual greenhouse emission following the implementation of the Project will further decrease with advancements in vehicle technology, fuel efficiency and exhaust control efficiency. Emissions are also expected to decrease as public transit and alternative transportation uses in the area increase to continue to support the reduction of emissions to meet the provincial climate change targets.

6.2 INTERIM WIDENING

A quantitative AQIA was completed for the ultimate widening conditions as this is considered to be the worst-case scenario in terms of air quality impacts due to higher traffic volumes and emission sources being closer to sensitive receptors when compared to the interim widening. Based on the results of the quantitative AQIA, a qualitative assessment of air quality impacts was completed for the interim widening conditions. It is assumed that the interim widening horizon year would be prior to 2041; therefore, based on traffic growth projections, traffic volumes in the Study Area would be lower than the ultimate conditions resulting in fewer vehicle emission sources. In addition, the interim conditions would result in widening from four to six lanes, resulting in the Highway 401 mainline being further from sensitive receptors when compared to the ultimate conditions. The results of the quantitative AQIA indicate that the Project ultimate widening is not expected to adversely impact air quality or GHG inventories within the Study Area. Due to the expected decrease in traffic volume and increased distance to sensitive receptors for the interim widening conditions, it is also expected that the interim conditions would not have an adverse impact on air quality or GHG inventories within the Study Area.

6.3 CONSTRUCTION AND OPERATION MITIGATION

This section documents a qualitative assessment of the potential effects that may occur during construction and operation and proposed mitigation measures and monitoring activities (as applicable) identified to minimize the predicted effects on air quality.

6.3.1 OPERATION EMISSIONS AND MITIGATION

The results presented in **Section 5** show an overall decrease in the maximum predicted concentrations during operations for all contaminants except for $PM_{2.5}$ and PM_{10}, which showed a slight increase for in the full build and no build scenarios. This overall decrease in concentrations is attributed to the expected increase in dispersion associated with road widening, increased efficiency of vehicles, more stringent emission standards, and emission control devices on future vehicles included within the MOVES3 model. The slight increase in particulate matter is expected due to an increase in future traffic volumes and associated tailpipe, brake wear, and tire wear emissions; however, the difference between the full build and no build scenarios is marginal. A comparison of the existing and future scenarios indicates that the Project is not expected to have a significant impact on provincial or regional GHG emission inventories and targets. As a result, there is no proposed mitigation required during Project operations except for regular road maintenance performed as part of normal operations for the MTO.

6.3.2 CONSTRUCTION EMISSIONS AND MITIGATION

Construction activities have the ability to impact localized air quality through increased particulate matter from fugitive dust and from combustion by-products through equipment mobilization. The construction activities associated with the Project consist of the construction of roadways and structures. Air emissions associated with construction typically include:

- Total Suspended Particulate (TSP), PM_{10}, and $PM_{2.5}$ resulting from:
  - Stockpiling of soils and other friable material;
  - Granular material loading and unloading activities;
  - Transportation of soils and other friable materials via dump trucks;
  - Soil excavation and filling activities;
  - Movement of heavy and light vehicles on paved and unpaved roads; and,
  - Cutting of existing concrete.

— Emissions resulting from the combustion engines of construction equipment.

Construction activities are exempt from air regulatory requirements in Ontario due to their temporary nature. Nuisance fugitive dust (coarse particulate such as TSP and PM_{10}) are the primary air quality impact during the construction phase of the Project. Nuisance fugitive dust can be managed through a Construction Air Quality Management Plan (CAQMP) for fugitive dust following the recommendations outlined in the Environment and Climate Change Canada (ECCC) guidance document "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities", dated March 2005. Air Quality Management Plans should ensure that dust from construction and demolition activities do not impact surrounding environmentally sensitive areas such as aquatic habitats and fisheries, terrestrial vegetation, and faunal communities, as well as residential properties in proximity to work areas.

To mitigate construction activities a CAQMP should be developed to address construction equipment vehicle exhaust, potential traffic disruptions and congestion, fugitive dust, and odour. Potential mitigation measures that may be incorporated in the CAQMP include:

— Dust suppression measures (e.g., application of water wherever appropriate, or the use of approved non-chloride chemical dust suppressants, where the application of water is not suitable);
— Use of dump trucks with retractable covers for the transport of soils and other friable materials;
— Minimize the number of loadings and unloading of soils and other friable materials;
— Minimize drop heights, use enclosed chutes, and cover bins for debris associated with deconstruction of affected structures;
— Washing of equipment and/use of mud mats where practical at construction site exits to limit the migration of soil and dust off-site;
— Stockpiling of soil and other friable materials in locations that are less exposed to wind (e.g., protected from the wind by suitable barriers or wind fences/screens, or covered when long-term storage is required) and away from sensitive receptors to the extent possible;
— Reduction of unnecessary traffic and implementation of speed limits;
— Permanent stabilization of exposed soil areas with non-erodible material (e.g., stone or vegetation) as soon as practicably possible after construction in the affected area is completed;
— Ensuring that all construction vehicles, machinery, and equipment are equipped with current emission controls, which are in a state of good repair; and,
— Dust-generating activities should be minimized during conditions of high wind.

In addition to the CAQMP, construction activities should be monitored by a qualified Environmental Inspector who will review the effectiveness of the mitigation measures and construction best management practices to confirm they are functioning as intended. If mitigation is found to not be effective, revised mitigation measures designed to improve effectiveness will be implemented. Dust levels should be monitored daily by the Contractor and frequently by the Environmental Inspector to assess the effectiveness of dust suppression measures and adjust as required. Monitoring should continue throughout the construction phase until activities are complete, the exposed soils have been stabilized, and the construction waste has been removed from site. A complaint response protocol will be established for nuisance effects, such as dust, for residents to provide feedback. Regular inspections of dust emissions should be carried out by the Contractor (frequency to be defined prior to project construction) to confirm dust control watering frequency and rates are adequate for control. Competent Site Supervisors should monitor the site for wind direction and weather conditions to ensure that high-risk dust generating activities are reduced when the wind is blowing consistently towards nearby sensitive receptors. The Site Supervisor should also monitor for visible fugitive dust and take action to determine and correct the cause. Specific details regarding monitoring should be included in the CAQMP.

7 CONCLUSIONS AND RECOMMENDATIONS

The results of the air quality impact assessment indicate the following:

- The existing air quality in the Study Area is good as the air quality criteria, with the exception of B(a)P, are met for the indicator contaminants selected for this assessment. The available background B(a)P data is limited and is consistent with level founds across Ontario.
- The Project is not expected to result in an increase in traffic volume within the Study Area.
- A quantitative AQIA was completed for the ultimate conditions as this is expected to be the worst-case scenario when compared to the interim conditions. Based on the results of the quantitative AQIA, a qualitative assessment was completed for the interim conditions.
- The Project impact for 1,3-butadiene and acetaldehyde was deemed negligible but a comparison of emission rates due to the increase of traffic volume in the Study Area was included and showed an overall decrease for these contaminants on all road sections for the future build and no build scenarios. When comparing SADT for both future scenarios, there is no predicted change in traffic volume. As a result, the Project full build scenario is not expected to alter 1,3-butadiene and acetaldehyde concentrations in the Study Area.
- Significant contaminants from the Project, $PM_{2.5}$, PM_{10}, NO_2, carbon monoxide, acrolein, formaldehyde, B(a)P, and benzene, carried through in the modelling assessment were predicted and indicate that the ambient air quality will remain good and below air quality criteria for all averaging times for the future (2041) scenarios except for B(a)P.
- Existing concentrations of B(a)P are already above the respective air quality threshold; however, the available background B(a)P data is limited and is consistent with level founds across Ontario. Based on future vehicle emission rates of B(a)P, concentrations of B(a)P are expected to decrease in the Study Area.
- Modelling results showed an overall decrease in concentrations of NO_2, carbon monoxide, acrolein, benzene, formaldehyde, and B(a)P when comparing existing conditions to the future (2041) full build and no build scenarios.
- Modelling results showed a slight increase in $PM_{2.5}$ and PM_{10} concentrations for the future (2041) full build and no build scenarios; however, the cumulative concentrations of these contaminants remain below their respective air quality threshold. The $PM_{2.5}$ and PM_{10} concentration increase between the full build and no build scenarios are overall the same for each road section, with some marginal differences; however, overall the results show that the Project build would not have an adverse impact on air quality within the Study Area.
- A comparison of the GHG emissions from the existing and future scenarios indicates that the Project is not expected to have a significant impact on provincial or regional GHG emission inventories. Overall, GHG emissions are expected to decrease, which will assist with meeting future regional and provincial GHG targets.
- It is expected that overall emission rates beyond 2041 will further decrease with advancements in vehicle technology, fuel efficiency and exhaust control efficiency. Emission rates are also expected to decrease as public transit and alternative transportation uses in the area increases to continue to support the reduction of emissions to meet the provincial climate change targets.
- Due to the expected decrease in traffic volume and increased distance to sensitive receptors for the interim widening conditions, it is also expected that the interim conditions would not have an adverse impact on air quality or GHG inventories within the Study Area.
- Project operations are not expected to adversely impact local air quality; however, the MTO should continue regular road maintenance performed as part of normal operations to reduce particulate matter emissions. To mitigate potential impacts during construction activities a CAQMP should be developed to address construction equipment vehicle exhaust, potential traffic disruptions and congestion, fugitive dust, and odour.

8 REFERENCES

Canada Energy Regulator: Provincial and Territorial Energy Profiles – Ontario

Canadian Council of Ministers of the Environment (CCME). 2022. Canadian Ambient Air Quality Standards.

Human Toxicology and Air Standards Section, Technical Assessment and Standards Development Branch, Ontario Ministry of the Environment, Conservation and Parks (MECP). 2020. Ambient Air Quality Criteria. MECP, Toronto, ON, Canada.

Lall, R., Kendall., M., Ito, K., Thurston, G.D. (2004) Estimation of Historical Annual $PM_{2.5}$ Exposures for Health Effects Assessment. Atmospheric Environment 38 (2004) 5217 – 5226. Accessed December 2022. https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.files/fileID/13226.

Ministry of the Environment, Conservation, and Parks (MECP), 2022: Ontario Environmental Registry accessed December 2022. https://ero.ontario.ca/

Ministry of the Environment, Conservation and Parks (MECP) (2020). Ontario's Ambient Air Quality Criteria, PIBS# 6570e01. Standards Development Branch, Ontario Ministry of the Environment and Climate Change

Ministry of the Environment, Conservation and Parks (MECP). (2019). *Air Dispersion Modelling Guideline for Ontario, Version 3.0*. PIBS: 5165e03, Toronto, Ontario

Ontario Regulation 390/18 Greenhouse Gas Emissions - Quantification, Reporting and Verification (O.Reg.390/18)

Ontario Regulation 419/05 Air Pollution – Local Air Quality (O.Reg.419/05)

Ontario Environmental Protection Act, R.S.O. 1990, c.E19

Ontario Ministry of Transportation (MTO) Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects, May 2020

Office of the Auditor General (2021). Follow-up on Value-for-Money Audit: Climate Change: Ontario's Plan to Reduce Greenhouse Gas Emissions Chapter 3

Tevlin et al, 2020. Tevlin, A., Galarneau, E., Zhang, T., and Hung, H. Polycyclic aromatic compounds (PACs) in the Canadian environment: Ambient air and deposition. Journal of Environmental Pollution 271:116232 (2021).

APPENDIX

A MOVES INPUTS AND TRAFFIC DATA

Table A1-1: Annual Average Daily Traffic (vehicles/day)

	2022													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	13,165	12,965	13,165	13,351	13,165	12,965	13,165	12,965	13,165	12,965	12,550	12,443	12,550	12,443
Passenger Trucks	13,165	12,965	13,165	13,351	13,165	12,965	13,165	12,965	13,165	12,965	12,550	12,443	12,550	12,443
Single Unit Short Haul (Medium Truck)	704	535	704	714	704	535	704	535	704	535	671	514	671	514
Combination Long Haul (Heavy Truck)	2,287	3,271	2,287	2,319	2,287	3,271	2,287	3,271	2,287	3,271	2,180	3,139	2,180	3,139
Total	29,321	29,735	29,321	29,735	29,321	29,735	29,321	29,735	29,321	29,735	27,952	28,540	27,952	28,540

Table A1-2: Annual Average Daily Traffic (vehicles/day)

	2041 No Build													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	16,254	15,914	16,254	16,389	16,254	15,914	16,254	15,914	16,254	15,914	16,433	16,176	16,433	16,176
Passenger Trucks	16,254	15,914	16,254	16,389	16,254	15,914	16,254	15,914	16,254	15,914	16,433	16,176	16,433	16,176
Single Unit Short Haul (Medium Truck)	869	657	869	876	869	657	869	657	869	657	878	668	878	668
Combination Long Haul (Heavy Truck)	2,824	4,015	2,824	2,847	2,824	4,015	2,824	4,015	2,824	4,015	2,855	4,081	2,855	4,081
Total	36,200	36,500	36,200	36,500	36,200	36,500	36,200	36,500	36,200	36,500	36,600	37,100	36,600	37,100

Table A1-3: Annual Average Daily Traffic (vehicles/day)

	2041 Full Build													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	16,254	15,914	16,254	16,389	16,254	15,914	16,254	15,914	16,254	15,914	16,433	16,176	16,433	16,176
Passenger Trucks	16,254	15,914	16,254	16,389	16,254	15,914	16,254	15,914	16,254	15,914	16,433	16,176	16,433	16,176
Single Unit Short Haul (Medium Truck)	869	657	869	876	869	657	869	657	869	657	878	668	878	668
Combination Long Haul (Heavy Truck)	2,824	4,015	2,824	2,847	2,824	4,015	2,824	4,015	2,824	4,015	2,855	4,081	2,855	4,081
Total	36,200	36,500	36,200	36,500	36,200	36,500	36,200	36,500	36,200	36,500	36,600	37,100	36,600	37,100

Table A2-1: Annual Average Daily Traffic Fractions

	2022													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	45%	44%	45%	45%	45%	44%	45%	44%	45%	44%	45%	44%	45%	44%
Passenger Trucks	45%	44%	45%	45%	45%	44%	45%	44%	45%	44%	45%	44%	45%	44%
Single Unit Short Haul (Medium Truck)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Combination Long Haul (Heavy Truck)	8%	11%	8%	8%	8%	11%	8%	11%	8%	11%	8%	11%	8%	11%

Table A2-2: Annual Average Daily Traffic Fractions

	2041 No Build													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	45%	44%	45%	45%	45%	44%	45%	44%	45%	44%	45%	44%	45%	44%
Passenger Trucks	45%	44%	45%	45%	45%	44%	45%	44%	45%	44%	45%	44%	45%	44%
Single Unit Short Haul (Medium Truck)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Combination Long Haul (Heavy Truck)	8%	11%	8%	8%	8%	11%	8%	11%	8%	11%	8%	11%	8%	11%

Table A2-3: Annual Average Daily Traffic Fractions

	2041 Full Build													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	45%	44%	45%	45%	45%	44%	45%	44%	45%	44%	45%	44%	45%	44%
Passenger Trucks	45%	44%	45%	45%	45%	44%	45%	44%	45%	44%	45%	44%	45%	44%
Single Unit Short Haul (Medium Truck)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Combination Long Haul (Heavy Truck)	8%	11%	8%	8%	8%	11%	8%	11%	8%	11%	8%	11%	8%	11%

Table A3-1: Daily Vehicle Miles Travelled (vehicle-miles/day)

	2022													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	3.11E+04	3.06E+04	7.36E+03	7.47E+03	1.64E+04	1.61E+04	1.23E+04	1.21E+04	2.29E+04	2.26E+04	9.36E+03	9.28E+03	3.59E+04	3.56E+04
Passenger Trucks	3.11E+04	3.06E+04	7.36E+03	7.47E+03	1.64E+04	1.61E+04	1.23E+04	1.21E+04	2.29E+04	2.26E+04	9.36E+03	9.28E+03	3.59E+04	3.56E+04
Single Unit Short Haul (Medium Truck)	1.66E+03	1.26E+03	3.94E+02	3.99E+02	8.75E+02	6.65E+02	6.56E+02	4.99E+02	1.22E+03	9.31E+02	5.00E+02	3.83E+02	1.92E+03	1.47E+03
Combination Long Haul (Heavy Truck)	5.40E+03	7.72E+03	1.28E+03	1.30E+03	2.84E+03	4.06E+03	2.13E+03	3.05E+03	3.98E+03	5.69E+03	1.63E+03	2.34E+03	6.23E+03	8.97E+03
Total VMT (vehicle-mi)	6.92E+04	7.02E+04	1.64E+04	1.66E+04	3.64E+04	3.70E+04	2.73E+04	2.77E+04	5.10E+04	5.17E+04	2.08E+04	2.13E+04	7.99E+04	8.16E+04
Segment Length (mi)	2.4	2.4	0.6	0.6	1.2	1.2	0.9	0.9	1.7	1.7	0.7	0.7	2.9	2.9
Segment Length (km)	3.8	3.8	0.9	0.9	2.0	2.0	1.5	1.5	2.8	2.8	1.2	1.2	4.6	4.6

Table A3-2: Daily Vehicle Miles Travelled (vehicle-miles/day)

	2041 No Build													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	3.84E+04	3.76E+04	9.09E+03	9.17E+03	2.02E+04	1.98E+04	1.51E+04	1.48E+04	2.83E+04	2.77E+04	1.23E+04	1.21E+04	4.70E+04	4.62E+04
Passenger Trucks	3.84E+04	3.76E+04	9.09E+03	9.17E+03	2.02E+04	1.98E+04	1.51E+04	1.48E+04	2.83E+04	2.77E+04	1.23E+04	1.21E+04	4.70E+04	4.62E+04
Single Unit Short Haul (Medium Truck)	2.05E+03	1.55E+03	4.86E+02	4.90E+02	1.08E+03	8.16E+02	8.10E+02	6.12E+02	1.51E+03	1.14E+03	6.55E+02	4.98E+02	2.51E+03	1.91E+03
Combination Long Haul (Heavy Truck)	6.67E+03	9.48E+03	1.58E+03	1.59E+03	3.51E+03	4.99E+03	2.63E+03	3.74E+03	4.91E+03	6.99E+03	2.13E+03	3.04E+03	8.16E+03	1.17E+04
Total VMT (vehicle-mi)	8.55E+04	8.62E+04	2.02E+04	2.04E+04	4.50E+04	4.54E+04	3.37E+04	3.40E+04	6.30E+04	6.35E+04	2.73E+04	2.77E+04	1.05E+05	1.06E+05
Segment Length (mi)	2.4	2.4	0.6	0.6	1.2	1.2	0.9	0.9	1.7	1.7	0.7	0.7	2.9	2.9
Segment Length (km)	3.8	3.8	0.9	0.9	2.0	2.0	1.5	1.5	2.8	2.8	1.2	1.2	4.6	4.6

Table A3-3: Daily Vehicle Miles Travelled (vehicle-miles/day)

	2041 Full Build													
	Segment													
Vehicle Class	1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B
Passenger Cars	3.84E+04	3.76E+04	9.09E+03	9.17E+03	2.02E+04	1.98E+04	1.51E+04	1.48E+04	2.83E+04	2.77E+04	1.23E+04	1.21E+04	4.70E+04	4.62E+04
Passenger Trucks	3.84E+04	3.76E+04	9.09E+03	9.17E+03	2.02E+04	1.98E+04	1.51E+04	1.48E+04	2.83E+04	2.77E+04	1.23E+04	1.21E+04	4.70E+04	4.62E+04
Single Unit Short Haul (Medium Truck)	2.05E+03	1.55E+03	4.86E+02	4.90E+02	1.08E+03	8.16E+02	8.10E+02	6.12E+02	1.51E+03	1.14E+03	6.55E+02	4.98E+02	2.51E+03	1.91E+03
Combination Long Haul (Heavy Truck)	6.67E+03	9.48E+03	1.58E+03	1.59E+03	3.51E+03	4.99E+03	2.63E+03	3.74E+03	4.91E+03	6.99E+03	2.13E+03	3.04E+03	8.16E+03	1.17E+04
Total VMT (vehicle-mi)	8.55E+04	8.62E+04	2.02E+04	2.04E+04	4.50E+04	4.54E+04	3.37E+04	3.40E+04	6.30E+04	6.35E+04	2.73E+04	2.77E+04	1.05E+05	1.06E+05
Segment Length (mi)	2.4	2.4	0.6	0.6	1.2	1.2	0.9	0.9	1.7	1.7	0.7	0.7	2.9	2.9
Segment Length (km)	3.8	3.8	0.9	0.9	2.0	2.0	1.5	1.5	2.8	2.8	1.2	1.2	4.6	4.6

Table A-4: MOVES Options Selected

Tab	Input	2022	2041
Description	Text	Highway 401 Belleville Year: 2022 Contaminants: TRAP, GHGs Passenger Vehicles, Medium and Heavy Trucks	Highway 401 Brighton Year: 2041 Contaminants: TRAP, GHGs Passenger Vehicles, Medium and Heavy Trucks
Scale	Model	Onroad	Onroad
	Domain/Scale	County	County
	Calculation Type	Emission Rates	Emission Rates
Time Spans	Years	2022	2041
	Months	July	July
	Days	Weekdays	Weekdays
	Hours	00:00 - 23:59	00:00 - 23:59
Georaphic Bounds	State	New York	New York
	County	Niagara County	Niagara County
Onroad Vehicles	Source Use Types	Passenger Car	Passenger Car
		Passenger Trucks	Passenger Trucks
		Single Unit Short Haul	Single Unit Short Haul
		Combination Long Haul	Combination Long Haul
Road Types	Selected	Off-network	Off-network
		Rural Restricted Access	Rural Restricted Access
		Rural Unrestricted Access	Rural Unrestricted Access
		Urban Restricted Access	Urban Restricted Access
		Urban Unrestricted Access	Urban Unrestricted Access
Pollutants	Selected	PM2.5	PM2.5
		PM10	PM10
		Acetaldehyde	Acetaldehyde
		Acrolein	Acrolein
		Benzene	Benzene
		1,3-butadiene	1,3-butadiene
		formaldehyde	formaldehyde
		B(a)P	B(a)P
		NO2	NO2
		CO	CO
		CO2-eq	CO2-eq
		Methane	Methane
		Nitrous Oxide	Nitrous Oxide
		Atmospheric CO2	Atmospheric CO2

Table A-5. Emission Rate Summary (g/s) by segment

			2022	2041 No Build	2041 Full Build
Segment	Speed	Contaminant	EF (g/s)	EF (g/s)	EF (g/s)
1-A	100 km/h	Carbon Monoxide	1.62E+00	9.22E-01	9.22E-01
		Methane	5.13E-03	2.77E-03	2.77E-03
		Nitrous Oxide	7.43E-04	7.59E-04	7.59E-04
		Benzene	6.68E-04	3.11E-04	3.11E-04
		1,3-Butadiene	4.61E-05	0.00E+00	0.00E+00
		Formaldehyde	1.01E-03	1.63E-04	1.63E-04
		Acetaldehyde	5.62E-04	1.83E-04	1.83E-04
		Acrolein	7.96E-05	1.66E-05	1.66E-05
		Nitrogen Dioxide	6.20E-02	4.71E-02	4.71E-02
		Atmospheric CO2	3.24E+02	3.06E+02	3.06E+02
		CO2-eq	3.24E+02	3.06E+02	3.06E+02
		Benzo(a)pyrene gas	3.05E-09	1.25E-09	1.25E-09
		PM10 (Tot+BW+TW+Resuspension)	2.15E-01	2.58E-01	2.58E-01
		PM2.5 (Tot+BW+TW+Resuspension)	5.82E-02	6.43E-02	6.43E-02
1-B	100 km/h	Carbon Monoxide	1.64E+00	9.39E-01	9.39E-01
		Methane	5.40E-03	2.91E-03	2.91E-03
		Nitrous Oxide	7.65E-04	7.83E-04	7.83E-04
		Benzene	6.80E-04	3.04E-04	3.04E-04
		1,3-Butadiene	5.27E-05	0.00E+00	0.00E+00
		Formaldehyde	1.27E-03	1.97E-04	1.97E-04
		Acetaldehyde	7.06E-04	2.38E-04	2.38E-04
		Acrolein	1.01E-04	2.14E-05	2.14E-05
		Nitrogen Dioxide	8.21E-02	6.41E-02	6.41E-02
		Atmospheric CO2	3.57E+02	3.34E+02	3.34E+02
		CO2-eq	3.58E+02	3.35E+02	3.35E+02
		Benzo(a)pyrene gas	3.00E-09	1.22E-09	1.22E-09
		PM10 (Tot+BW+TW+Resuspension)	2.64E-01	3.13E-01	3.13E-01
		PM2.5 (Tot+BW+TW+Resuspension)	7.20E-02	7.84E-02	7.84E-02
2-A	100 km/h	Carbon Monoxide	3.84E-01	2.18E-01	2.18E-01
		Methane	1.21E-03	6.57E-04	6.57E-04
		Nitrous Oxide	1.76E-04	1.80E-04	1.80E-04
		Benzene	1.58E-04	7.36E-05	7.36E-05
		1,3-Butadiene	1.09E-05	0.00E+00	0.00E+00
		Formaldehyde	2.39E-04	3.86E-05	3.86E-05
		Acetaldehyde	1.33E-04	4.33E-05	4.33E-05
		Acrolein	1.88E-05	3.93E-06	3.93E-06
		Nitrogen Dioxide	1.47E-02	1.12E-02	1.12E-02
		Atmospheric CO2	7.67E+01	7.24E+01	7.24E+01
		CO2-eq	7.68E+01	7.25E+01	7.25E+01
		Benzo(a)pyrene gas	7.23E-10	2.96E-10	2.96E-10
		PM10 (Tot+BW+TW+Resuspension)	5.10E-02	6.10E-02	6.10E-02
		PM2.5 (Tot+BW+TW+Resuspension)	1.38E-02	1.52E-02	1.52E-02

2-B	100 km/h	Carbon Monoxide	3.89E-01	2.20E-01	2.20E-01
		Methane	1.23E-03	6.63E-04	6.63E-04
		Nitrous Oxide	1.79E-04	1.81E-04	1.81E-04
		Benzene	1.60E-04	7.43E-05	7.43E-05
		1,3-Butadiene	1.11E-05	0.00E+00	0.00E+00
		Formaldehyde	2.43E-04	3.89E-05	3.89E-05
		Acetaldehyde	1.35E-04	4.37E-05	4.37E-05
		Acrolein	1.91E-05	3.97E-06	3.97E-06
		Nitrogen Dioxide	1.49E-02	1.12E-02	1.12E-02
		Atmospheric CO2	7.78E+01	7.30E+01	7.30E+01
		CO2-eq	7.78E+01	7.31E+01	7.31E+01
		Benzo(a)pyrene gas	7.33E-10	2.98E-10	2.98E-10
		PM10 (Tot+BW+TW+Resuspension)	5.17E-02	6.15E-02	6.15E-02
		PM2.5 (Tot+BW+TW+Resuspension)	1.40E-02	1.54E-02	1.54E-02
3-A	100 km/h	Carbon Monoxide	8.53E-01	4.85E-01	4.85E-01
		Methane	2.70E-03	1.46E-03	1.46E-03
		Nitrous Oxide	3.91E-04	4.00E-04	4.00E-04
		Benzene	3.52E-04	1.64E-04	1.64E-04
		1,3-Butadiene	2.43E-05	0.00E+00	0.00E+00
		Formaldehyde	5.32E-04	8.58E-05	8.58E-05
		Acetaldehyde	2.96E-04	9.62E-05	9.62E-05
		Acrolein	4.19E-05	8.74E-06	8.74E-06
		Nitrogen Dioxide	3.26E-02	2.48E-02	2.48E-02
		Atmospheric CO2	1.70E+02	1.61E+02	1.61E+02
		CO2-eq	1.71E+02	1.61E+02	1.61E+02
		Benzo(a)pyrene gas	1.61E-09	6.57E-10	6.57E-10
		PM10 (Tot+BW+TW+Resuspension)	1.13E-01	1.36E-01	1.36E-01
		PM2.5 (Tot+BW+TW+Resuspension)	3.07E-02	3.39E-02	3.39E-02
3-B	100 km/h	Carbon Monoxide	8.63E-01	4.94E-01	4.94E-01
		Methane	2.84E-03	1.53E-03	1.53E-03
		Nitrous Oxide	4.02E-04	4.12E-04	4.12E-04
		Benzene	3.58E-04	1.60E-04	1.60E-04
		1,3-Butadiene	2.77E-05	0.00E+00	0.00E+00
		Formaldehyde	6.67E-04	1.04E-04	1.04E-04
		Acetaldehyde	3.71E-04	1.25E-04	1.25E-04
		Acrolein	5.32E-05	1.13E-05	1.13E-05
		Nitrogen Dioxide	4.32E-02	3.38E-02	3.38E-02
		Atmospheric CO2	1.88E+02	1.76E+02	1.76E+02
		CO2-eq	1.88E+02	1.76E+02	1.76E+02
		Benzo(a)pyrene gas	1.58E-09	6.44E-10	6.44E-10
		PM10 (Tot+BW+TW+Resuspension)	1.39E-01	1.65E-01	1.65E-01
		PM2.5 (Tot+BW+TW+Resuspension)	3.79E-02	4.13E-02	4.13E-02

4-A	100 km/h	Carbon Monoxide	6.39E-01	3.64E-01	3.64E-01
		Methane	2.02E-03	1.10E-03	1.10E-03
		Nitrous Oxide	2.93E-04	3.00E-04	3.00E-04
		Benzene	2.64E-04	1.23E-04	1.23E-04
		1,3-Butadiene	1.82E-05	0.00E+00	0.00E+00
		Formaldehyde	3.99E-04	6.43E-05	6.43E-05
		Acetaldehyde	2.22E-04	7.22E-05	7.22E-05
		Acrolein	3.14E-05	6.56E-06	6.56E-06
		Nitrogen Dioxide	2.45E-02	1.86E-02	1.86E-02
		Atmospheric CO2	1.28E+02	1.21E+02	1.21E+02
		CO2-eq	1.28E+02	1.21E+02	1.21E+02
		Benzo(a)pyrene gas	1.20E-09	4.93E-10	4.93E-10
		PM10 (Tot+BW+TW+Resuspension)	8.50E-02	1.02E-01	1.02E-01
		PM2.5 (Tot+BW+TW+Resuspension)	2.30E-02	2.54E-02	2.54E-02
4-B	100 km/h	Carbon Monoxide	6.47E-01	3.71E-01	3.71E-01
		Methane	2.13E-03	1.15E-03	1.15E-03
		Nitrous Oxide	3.02E-04	3.09E-04	3.09E-04
		Benzene	2.68E-04	1.20E-04	1.20E-04
		1,3-Butadiene	2.08E-05	0.00E+00	0.00E+00
		Formaldehyde	5.00E-04	7.79E-05	7.79E-05
		Acetaldehyde	2.79E-04	9.41E-05	9.41E-05
		Acrolein	3.99E-05	8.44E-06	8.44E-06
		Nitrogen Dioxide	3.24E-02	2.53E-02	2.53E-02
		Atmospheric CO2	1.41E+02	1.32E+02	1.32E+02
		CO2-eq	1.41E+02	1.32E+02	1.32E+02
		Benzo(a)pyrene gas	1.19E-09	4.83E-10	4.83E-10
		PM10 (Tot+BW+TW+Resuspension)	1.04E-01	1.24E-01	1.24E-01
		PM2.5 (Tot+BW+TW+Resuspension)	2.84E-02	3.10E-02	3.10E-02
5-A	100 km/h	Carbon Monoxide	1.19E+00	6.80E-01	6.80E-01
		Methane	3.78E-03	2.04E-03	2.04E-03
		Nitrous Oxide	5.48E-04	5.59E-04	5.59E-04
		Benzene	4.92E-04	2.29E-04	2.29E-04
		1,3-Butadiene	3.40E-05	0.00E+00	0.00E+00
		Formaldehyde	7.45E-04	1.20E-04	1.20E-04
		Acetaldehyde	4.14E-04	1.35E-04	1.35E-04
		Acrolein	5.86E-05	1.22E-05	1.22E-05
		Nitrogen Dioxide	4.57E-02	3.47E-02	3.47E-02
		Atmospheric CO2	2.39E+02	2.25E+02	2.25E+02
		CO2-eq	2.39E+02	2.26E+02	2.26E+02
		Benzo(a)pyrene gas	2.25E-09	9.20E-10	9.20E-10
		PM10 (Tot+BW+TW+Resuspension)	1.59E-01	1.90E-01	1.90E-01
		PM2.5 (Tot+BW+TW+Resuspension)	4.29E-02	4.74E-02	4.74E-02

5-B	100 km/h	Carbon Monoxide	1.21E+00	6.92E-01	6.92E-01
		Methane	3.98E-03	2.14E-03	2.14E-03
		Nitrous Oxide	5.63E-04	5.77E-04	5.77E-04
		Benzene	5.01E-04	2.24E-04	2.24E-04
		1,3-Butadiene	3.88E-05	0.00E+00	0.00E+00
		Formaldehyde	9.33E-04	1.45E-04	1.45E-04
		Acetaldehyde	5.20E-04	1.76E-04	1.76E-04
		Acrolein	7.44E-05	1.58E-05	1.58E-05
		Nitrogen Dioxide	6.05E-02	4.73E-02	4.73E-02
		Atmospheric CO2	2.63E+02	2.46E+02	2.46E+02
		CO2-eq	2.64E+02	2.46E+02	2.46E+02
		Benzo(a)pyrene gas	2.21E-09	9.01E-10	9.01E-10
		PM10 (Tot+BW+TW+Resuspension)	1.94E-01	2.31E-01	2.31E-01
		PM2.5 (Tot+BW+TW+Resuspension)	5.30E-02	5.78E-02	5.78E-02
6-A	100 km/h	Carbon Monoxide	4.88E-01	2.95E-01	2.95E-01
		Methane	1.54E-03	8.86E-04	8.86E-04
		Nitrous Oxide	2.24E-04	2.42E-04	2.42E-04
		Benzene	2.01E-04	9.93E-05	9.93E-05
		1,3-Butadiene	1.39E-05	0.00E+00	0.00E+00
		Formaldehyde	3.04E-04	5.20E-05	5.20E-05
		Acetaldehyde	1.69E-04	5.84E-05	5.84E-05
		Acrolein	2.40E-05	5.30E-06	5.30E-06
		Nitrogen Dioxide	1.87E-02	1.50E-02	1.50E-02
		Atmospheric CO2	9.75E+01	9.77E+01	9.77E+01
		CO2-eq	9.76E+01	9.77E+01	9.77E+01
		Benzo(a)pyrene gas	9.18E-10	3.99E-10	3.99E-10
		PM10 (Tot+BW+TW+Resuspension)	6.48E-02	8.23E-02	8.23E-02
		PM2.5 (Tot+BW+TW+Resuspension)	1.75E-02	2.05E-02	2.05E-02
6-B	100 km/h	Carbon Monoxide	4.97E-01	3.01E-01	3.01E-01
		Methane	1.64E-03	9.33E-04	9.33E-04
		Nitrous Oxide	2.32E-04	2.51E-04	2.51E-04
		Benzene	2.06E-04	9.77E-05	9.77E-05
		1,3-Butadiene	1.60E-05	0.00E+00	0.00E+00
		Formaldehyde	3.84E-04	6.34E-05	6.34E-05
		Acetaldehyde	2.14E-04	7.65E-05	7.65E-05
		Acrolein	3.06E-05	6.86E-06	6.86E-06
		Nitrogen Dioxide	2.49E-02	2.06E-02	2.06E-02
		Atmospheric CO2	1.08E+02	1.07E+02	1.07E+02
		CO2-eq	1.08E+02	1.07E+02	1.07E+02
		Benzo(a)pyrene gas	9.11E-10	3.92E-10	3.92E-10
		PM10 (Tot+BW+TW+Resuspension)	7.99E-02	1.00E-01	1.00E-01
		PM2.5 (Tot+BW+TW+Resuspension)	2.18E-02	2.52E-02	2.52E-02

7-A	100 km/h	Carbon Monoxide	1.87E+00	1.13E+00	1.13E+00
		Methane	5.91E-03	3.40E-03	3.40E-03
		Nitrous Oxide	8.58E-04	9.29E-04	9.29E-04
		Benzene	7.71E-04	3.81E-04	3.81E-04
		1,3-Butadiene	5.32E-05	0.00E+00	0.00E+00
		Formaldehyde	1.17E-03	1.99E-04	1.99E-04
		Acetaldehyde	6.49E-04	2.24E-04	2.24E-04
		Acrolein	9.18E-05	2.03E-05	2.03E-05
		Nitrogen Dioxide	7.15E-02	5.76E-02	5.76E-02
		Atmospheric CO2	3.74E+02	3.74E+02	3.74E+02
		CO2-eq	3.74E+02	3.75E+02	3.75E+02
		Benzo(a)pyrene gas	3.52E-09	1.53E-09	1.53E-09
		PM10 (Tot+BW+TW+Resuspension)	2.48E-01	3.15E-01	3.15E-01
		PM2.5 (Tot+BW+TW+Resuspension)	6.72E-02	7.88E-02	7.88E-02
7-B	100 km/h	Carbon Monoxide	1.90E+00	1.16E+00	1.16E+00
		Methane	6.28E-03	3.58E-03	3.58E-03
		Nitrous Oxide	8.88E-04	9.64E-04	9.64E-04
		Benzene	7.90E-04	3.75E-04	3.75E-04
		1,3-Butadiene	6.12E-05	0.00E+00	0.00E+00
		Formaldehyde	1.47E-03	2.43E-04	2.43E-04
		Acetaldehyde	8.20E-04	2.93E-04	2.93E-04
		Acrolein	1.17E-04	2.63E-05	2.63E-05
		Nitrogen Dioxide	9.54E-02	7.89E-02	7.89E-02
		Atmospheric CO2	4.15E+02	4.11E+02	4.11E+02
		CO2-eq	4.16E+02	4.12E+02	4.12E+02
		Benzo(a)pyrene gas	3.49E-09	1.50E-09	1.50E-09
		PM10 (Tot+BW+TW+Resuspension)	3.06E-01	3.85E-01	3.85E-01
		PM2.5 (Tot+BW+TW+Resuspension)	8.36E-02	9.65E-02	9.65E-02

APPENDIX

B AERMOD INPUTS

Table B-1 Source Identification

Source Information				Expected Contaminants	Included in Modelling?	Rationale for Source/Contaminant Insignficance
Source ID	Source Description or Title	General Location				
		UTM-E	UTM-N			
ROAD1 to ROAD25	Highway 401 mainline and ramps	Various	Various	Benzene	Yes	Transportation contaminants of concern based on MTO Environmental Guide for Assessing and Mitigating the Air Quality Impacts and Greenhouse Gas Emissions of Provincial Transportation Projects (May 2020).
				Acrolein	Yes	
				PM2.5	Yes	
				PM10	Yes	
				NOx (as NO2)	Yes	
				CO	Yes	
				Benzo(a)pyrene	Yes	
				1,3-Butadiene	No	
				Formaldehyde	Yes	
				Acetaldehyde	No	

Table B-2. Source Summary Table

Study Area	Source ID	Source Description	Source Type	Emission Rates						
				Contaminant	Existing 2022 (g/s)	Future No Build 2036 (g/s)	Future Full Build 2036 (g/s)	Averaging Period (hours)	Emissions Estimate Techniques	Emissions Data Quality
1	ROAD1	Highway 401 WB (west of Wallbridge-Loyalist Rd to Highway 62)	Line Volume	Carbon Monoxide	1.70E+00	1.12E+00	1.12E+00	1-hr, 8-hr	EF	ADQ
				Benzene	7.03E-04	2.94E-04	2.94E-04	24-hr, annual	EF	ADQ
				1,3-Butadiene	7.72E-05	3.05E-07	3.05E-07	24-hr, annual	EF	ADQ
				Formaldehyde	2.12E-03	2.68E-04	2.68E-04	24-hr	EF	ADQ
				Acetaldehyde	1.13E-03	3.15E-04	3.15E-04	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.71E-04	2.87E-05	2.87E-05	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.23E-01	9.81E-02	9.81E-02	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	2.73E-09	1.21E-09	1.21E-09	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	3.58E-01	3.97E-01	3.97E-01	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	9.91E-02	9.95E-02	9.95E-02	24-hr, annual	EF	ADQ
	ROAD2	Highway 401 EB (west of Wallbridge-Loyalist Rd to Highway 62)	Line Volume	Carbon Monoxide	1.70E+00	1.12E+00	1.12E+00	1-hr, 8-hr	EF	ADQ
				Benzene	7.03E-04	2.94E-04	2.94E-04	24-hr, annual	EF	ADQ
				1,3-Butadiene	7.72E-05	3.05E-07	3.05E-07	24-hr, annual	EF	ADQ
				Formaldehyde	2.12E-03	2.68E-04	2.68E-04	24-hr	EF	ADQ
				Acetaldehyde	1.13E-03	3.15E-04	3.15E-04	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.71E-04	2.87E-05	2.87E-05	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.23E-01	9.81E-02	9.81E-02	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	2.73E-09	1.21E-09	1.21E-09	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	3.58E-01	3.97E-01	3.97E-01	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	9.91E-02	9.95E-02	9.95E-02	24-hr, annual	EF	ADQ
	ROAD5	Wallbridge-Loyalist Rd (Concession Rd 3 to Bell Blvd W)	Line Volume	Carbon Monoxide	4.92E-01	3.13E-01	3.13E-01	1-hr, 8-hr	EF	ADQ
				Benzene	2.46E-04	1.26E-04	1.26E-04	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.62E-05	4.70E-08	4.70E-08	24-hr, annual	EF	ADQ
				Formaldehyde	3.41E-04	6.13E-05	6.13E-05	24-hr	EF	ADQ
				Acetaldehyde	1.89E-04	6.42E-05	6.42E-05	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.67E-05	5.95E-06	5.95E-06	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	2.12E-02	2.22E-02	2.22E-02	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	1.09E-09	4.56E-10	4.56E-10	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	4.68E-02	5.20E-02	1.55E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	1.18E-02	1.16E-02	3.90E-02	24-hr, annual	EF	ADQ
	ROAD9	Highway 401 EB Off Ramp to NSB Wallbridge-Loyalist Rd	Line Volume	Carbon Monoxide	4.72E-02	3.15E-02	3.15E-02	1-hr, 8-hr	EF	ADQ
				Benzene	2.20E-05	9.66E-06	9.66E-06	24-hr, annual	EF	ADQ
				1,3-Butadiene	2.05E-06	7.73E-09	7.73E-09	24-hr, annual	EF	ADQ
				Formaldehyde	5.27E-05	8.18E-06	8.18E-06	24-hr	EF	ADQ
				Acetaldehyde	2.90E-05	9.64E-06	9.64E-06	0.5-hr, 24-hr	EF	ADQ
				Acrolein	4.25E-06	8.76E-07	8.76E-07	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	3.85E-03	4.00E-03	4.00E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	9.34E-11	3.93E-11	3.93E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	3.42E-02	1.42E-02	1.42E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	8.70E-03	3.43E-03	3.43E-03	24-hr, annual	EF	ADQ

Study Area	Source ID	Source Description	Source Type	Emission Rates						
				Contaminant	Existing 2022 (g/s)	Future No Build 2036 (g/s)	Future Full Build 2036 (g/s)	Averaging Period (hours)	Emissions Estimate Techniques	Emissions Data Quality
	ROAD10	Highway 401 EB On Ramp from SB Wallbridge-Loyalist Rd	Line Volume	Carbon Monoxide	3.40E-02	2.38E-02	2.38E-02	1-hr, 8-hr	EF	ADQ
				Benzene	1.60E-05	6.25E-06	6.25E-06	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.95E-06	8.64E-09	8.64E-09	24-hr, annual	EF	ADQ
				Formaldehyde	5.62E-05	8.04E-06	8.04E-06	24-hr	EF	ADQ
				Acetaldehyde	3.07E-05	1.01E-05	1.01E-05	0.5-hr, 24-hr	EF	ADQ
				Acrolein	4.59E-06	9.11E-07	9.11E-07	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	4.23E-03	4.45E-03	4.45E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	6.02E-11	2.54E-11	2.54E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	3.38E-02	3.86E-02	3.86E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	8.63E-03	9.53E-03	9.53E-03	24-hr, annual	EF	ADQ
	ROAD11	Highway 401 WB On Ramp from SB Wallbridge-Loyalist Rd	Line Volume	Carbon Monoxide	3.21E-02	2.10E-02	2.10E-02	1-hr, 8-hr	EF	ADQ
				Benzene	1.49E-05	6.81E-06	6.81E-06	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.24E-06	4.29E-09	4.29E-09	24-hr, annual	EF	ADQ
				Formaldehyde	2.98E-05	4.81E-06	4.81E-06	24-hr	EF	ADQ
				Acetaldehyde	1.64E-05	5.44E-06	5.44E-06	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.38E-06	4.97E-07	4.97E-07	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	2.12E-03	2.17E-03	2.17E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	6.59E-11	2.77E-11	2.77E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	2.00E-02	8.35E-03	8.35E-03	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	5.08E-03	2.01E-03	2.01E-03	24-hr, annual	EF	ADQ
	ROAD12	Highway 401 WB Off Ramp to NSB Wallbridge-Loyalist Rd	Line Volume	Carbon Monoxide	5.42E-02	3.61E-02	3.61E-02	1-hr, 8-hr	EF	ADQ
				Benzene	3.00E-05	1.44E-05	1.44E-05	24-hr, annual	EF	ADQ
				1,3-Butadiene	2.90E-06	1.24E-08	1.24E-08	24-hr, annual	EF	ADQ
				Formaldehyde	7.96E-05	1.20E-05	1.20E-05	24-hr	EF	ADQ
				Acetaldehyde	4.32E-05	1.48E-05	1.48E-05	0.5-hr, 24-hr	EF	ADQ
				Acrolein	6.45E-06	1.33E-06	1.33E-06	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	4.93E-03	5.39E-03	5.39E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	1.07E-10	4.50E-11	4.50E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	9.57E-03	1.06E-02	1.06E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	2.49E-03	2.46E-03	2.46E-03	24-hr, annual	EF	ADQ
	ROAD13	Highway 401 EB On Ramp from NB Wallbridge-Loyalist Rd	Line Volume	Carbon Monoxide	1.85E-02	1.24E-02	1.24E-02	1-hr, 8-hr	EF	ADQ
				Benzene	9.29E-06	4.20E-06	4.20E-06	24-hr, annual	EF	ADQ
				1,3-Butadiene	7.89E-07	2.80E-09	2.80E-09	24-hr, annual	EF	ADQ
				Formaldehyde	1.95E-05	3.33E-06	3.33E-06	24-hr	EF	ADQ
				Acetaldehyde	1.09E-05	3.90E-06	3.90E-06	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.57E-06	3.55E-07	3.55E-07	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.55E-03	1.71E-03	1.71E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	4.08E-11	1.69E-11	1.69E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.05E-02	1.20E-02	1.20E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	2.67E-03	2.93E-03	2.93E-03	24-hr, annual	EF	ADQ

Study Area	Source ID	Source Description	Source Type	Emission Rates						
				Contaminant	Existing 2022 (g/s)	Future No Build 2036 (g/s)	Future Full Build 2036 (g/s)	Averaging Period (hours)	Emissions Estimate Techniques	Emissions Data Quality
2	ROAD3	Highway 401 WB (Highway 62 to east of Atkins Rd)	Line Volume	Carbon Monoxide	2.07E+00	1.36E+00	1.36E+00	1-hr, 8-hr	EF	ADQ
				Benzene	8.55E-04	3.58E-04	3.58E-04	24-hr, annual	EF	ADQ
				1,3-Butadiene	9.39E-05	3.71E-07	3.71E-07	24-hr, annual	EF	ADQ
				Formaldehyde	2.57E-03	3.26E-04	3.26E-04	24-hr	EF	ADQ
				Acetaldehyde	1.37E-03	3.83E-04	3.83E-04	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.08E-04	3.49E-05	3.49E-05	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.50E-01	1.19E-01	1.19E-01	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	3.32E-09	1.48E-09	1.48E-09	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	4.35E-01	4.82E-01	4.82E-01	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	1.20E-01	1.21E-01	1.21E-01	24-hr, annual	EF	ADQ
	ROAD4	Highway 401 EB (Highway 62 to east of Atkins Rd)	Line Volume	Carbon Monoxide	2.07E+00	1.36E+00	1.36E+00	1-hr, 8-hr	EF	ADQ
				Benzene	8.55E-04	3.58E-04	3.58E-04	24-hr, annual	EF	ADQ
				1,3-Butadiene	9.39E-05	3.71E-07	3.71E-07	24-hr, annual	EF	ADQ
				Formaldehyde	2.57E-03	3.26E-04	3.26E-04	24-hr	EF	ADQ
				Acetaldehyde	1.37E-03	3.83E-04	3.83E-04	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.08E-04	3.49E-05	3.49E-05	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.50E-01	1.19E-01	1.19E-01	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	3.32E-09	1.48E-09	1.48E-09	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	4.35E-01	4.82E-01	4.82E-01	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	1.20E-01	1.21E-01	1.21E-01	24-hr, annual	EF	ADQ
	ROAD7	Highway 62 (Millenium Parkway to Bell Blvd)	Line Volume	Carbon Monoxide	6.32E-01	3.98E-01	3.95E-01	1-hr, 8-hr	EF	ADQ
				Benzene	3.19E-04	1.72E-04	1.70E-04	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.74E-05	4.05E-08	4.01E-08	24-hr, annual	EF	ADQ
				Formaldehyde	2.98E-04	5.91E-05	5.86E-05	24-hr	EF	ADQ
				Acetaldehyde	1.66E-04	5.29E-05	5.24E-05	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.26E-05	5.06E-06	5.01E-06	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.54E-02	1.50E-02	1.48E-02	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	1.46E-09	6.15E-10	6.09E-10	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	4.63E-02	5.24E-02	5.19E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	1.10E-02	1.14E-02	1.13E-02	24-hr, annual	EF	ADQ
	ROAD14	Highway 401 EB Off Ramp to SB Highway 62	Line Volume	Carbon Monoxide	1.49E-02	9.88E-03	3.53E-02	1-hr, 8-hr	EF	ADQ
				Benzene	6.94E-06	3.09E-06	1.31E-05	24-hr, annual	EF	ADQ
				1,3-Butadiene	6.21E-07	2.28E-09	1.36E-08	24-hr, annual	EF	ADQ
				Formaldehyde	1.56E-05	2.46E-06	1.34E-05	24-hr	EF	ADQ
				Acetaldehyde	8.59E-06	2.85E-06	1.69E-05	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.25E-06	2.60E-07	1.52E-06	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.13E-03	1.17E-03	6.69E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	2.99E-11	1.26E-11	4.20E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.03E-02	1.17E-02	1.09E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	2.60E-03	2.89E-03	2.49E-03	24-hr, annual	EF	ADQ

Study Area	Source ID	Source Description	Source Type	Emission Rates						
				Contaminant	Existing 2022 (g/s)	Future No Build 2036 (g/s)	Future Full Build 2036 (g/s)	Averaging Period (hours)	Emissions Estimate Techniques	Emissions Data Quality
	ROAD15	Highway 401 EB On Ramp from SB Highway 62	Line Volume	Carbon Monoxide	1.40E-02	9.72E-03	1.83E-02	1-hr, 8-hr	EF	ADQ
				Benzene	6.58E-06	2.59E-06	5.19E-06	24-hr, annual	EF	ADQ
				1,3-Butadiene	7.82E-07	3.44E-09	5.67E-09	24-hr, annual	EF	ADQ
				Formaldehyde	2.23E-05	3.21E-06	5.49E-06	24-hr	EF	ADQ
				Acetaldehyde	1.22E-05	4.02E-06	6.74E-06	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.82E-06	3.62E-07	6.08E-07	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.68E-03	1.76E-03	2.89E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	2.50E-11	1.05E-11	2.11E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.35E-02	1.54E-02	2.63E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	3.44E-03	3.80E-03	6.49E-03	24-hr, annual	EF	ADQ
	ROAD16	Highway 401 EB On Ramp from NB Highway 62	Line Volume	Carbon Monoxide	1.97E-02	1.32E-02	N/A	1-hr, 8-hr	EF	ADQ
				Benzene	9.90E-06	4.51E-06	N/A	24-hr, annual	EF	ADQ
				1,3-Butadiene	8.24E-07	2.87E-09	N/A	24-hr, annual	EF	ADQ
				Formaldehyde	2.01E-05	3.47E-06	N/A	24-hr	EF	ADQ
				Acetaldehyde	1.13E-05	4.04E-06	N/A	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.61E-06	3.67E-07	N/A	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.60E-03	1.76E-03	N/A	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	4.37E-11	1.82E-11	N/A	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.10E-02	1.25E-02	N/A	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	2.78E-03	3.06E-03	N/A	24-hr, annual	EF	ADQ
	ROAD17	Highway 401 EB Off Ramp to NB Highway 62	Line Volume	Carbon Monoxide	1.53E-02	1.02E-02	N/A	1-hr, 8-hr	EF	ADQ
				Benzene	7.12E-06	3.12E-06	N/A	24-hr, annual	EF	ADQ
				1,3-Butadiene	6.64E-07	2.51E-09	N/A	24-hr, annual	EF	ADQ
				Formaldehyde	1.71E-05	2.66E-06	N/A	24-hr	EF	ADQ
				Acetaldehyde	9.41E-06	3.13E-06	N/A	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.38E-06	2.85E-07	N/A	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.25E-03	1.30E-03	N/A	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	3.02E-11	1.27E-11	N/A	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.11E-02	1.27E-02	N/A	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	2.83E-03	3.13E-03	N/A	24-hr, annual	EF	ADQ
	ROAD18	Highway 401 WB Off Ramp to SB Highway 62	Line Volume	Carbon Monoxide	3.06E-02	2.01E-02	5.44E-02	1-hr, 8-hr	EF	ADQ
				Benzene	1.42E-05	6.49E-06	2.09E-05	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.19E-06	4.12E-09	1.72E-08	24-hr, annual	EF	ADQ
				Formaldehyde	2.86E-05	4.61E-06	1.75E-05	24-hr	EF	ADQ
				Acetaldehyde	1.58E-05	5.21E-06	2.14E-05	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.29E-06	4.77E-07	1.93E-06	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	2.03E-03	2.09E-03	8.30E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	6.29E-11	2.65E-11	6.91E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.92E-02	2.19E-02	1.62E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	4.87E-03	5.41E-03	3.73E-03	24-hr, annual	EF	ADQ

Study Area	Source ID	Source Description	Source Type	Emission Rates						
				Contaminant	Existing 2022 (g/s)	Future No Build 2036 (g/s)	Future Full Build 2036 (g/s)	Averaging Period (hours)	Emissions Estimate Techniques	Emissions Data Quality
	ROAD19	Highway 401 WB On Ramp from SB Highway 62	Line Volume	Carbon Monoxide	2.54E-02	1.71E-02	3.29E-02	1-hr, 8-hr	EF	ADQ
				Benzene	1.28E-05	5.85E-06	1.13E-05	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.06E-06	3.70E-09	7.08E-09	24-hr, annual	EF	ADQ
				Formaldehyde	2.58E-05	4.42E-06	8.49E-06	24-hr	EF	ADQ
				Acetaldehyde	1.44E-05	5.13E-06	9.83E-06	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.07E-06	4.67E-07	8.95E-07	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	2.03E-03	2.22E-03	4.26E-03	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	5.67E-11	2.36E-11	4.55E-11	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.40E-02	1.59E-02	1.17E-02	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	3.54E-03	3.89E-03	2.74E-03	24-hr, annual	EF	ADQ
	ROAD20	Highway 401 WB On Ramp from NB Highway 62	Line Volume	Carbon Monoxide	2.13E-02	1.40E-02	N/A	1-hr, 8-hr	EF	ADQ
				Benzene	9.87E-06	4.50E-06	N/A	24-hr, annual	EF	ADQ
				1,3-Butadiene	8.25E-07	2.85E-09	N/A	24-hr, annual	EF	ADQ
				Formaldehyde	2.00E-05	3.24E-06	N/A	24-hr	EF	ADQ
				Acetaldehyde	1.10E-05	3.67E-06	N/A	0.5-hr, 24-hr	EF	ADQ
				Acrolein	1.60E-06	3.36E-07	N/A	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	1.43E-03	1.47E-03	N/A	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	4.36E-11	1.83E-11	N/A	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.35E-02	1.54E-02	N/A	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	3.42E-03	3.80E-03	N/A	24-hr, annual	EF	ADQ
	ROAD21	Highway 401 WB Off Ramp to NB Highway 62	Line Volume	Carbon Monoxide	2.36E-02	1.55E-02	N/A	1-hr, 8-hr	EF	ADQ
				Benzene	1.15E-05	5.03E-06	N/A	24-hr, annual	EF	ADQ
				1,3-Butadiene	1.06E-06	3.09E-09	N/A	24-hr, annual	EF	ADQ
				Formaldehyde	2.77E-05	3.50E-06	N/A	24-hr	EF	ADQ
				Acetaldehyde	1.53E-05	3.94E-06	N/A	0.5-hr, 24-hr	EF	ADQ
				Acrolein	2.23E-06	3.61E-07	N/A	1-hr, 24-hr	EF	ADQ
				Nitrogen Dioxide	2.10E-03	1.57E-03	N/A	1-hr, 24-hr, annual	EF	ADQ
				Benzo(a)pyrene gas	4.87E-11	2.05E-11	N/A	24-hr, annual	EF	ADQ
				PM10 (Tot+BW+TW+Resuspension)	1.47E-02	1.66E-02	N/A	24-hr	EF	ADQ
				PM2.5 (Tot+BW+TW+Resuspension)	3.77E-03	4.10E-03	N/A	24-hr, annual	EF	ADQ

Notes:

EF: Emission Factors

ADQ: Average Data Quality

Table D-4. Assessment of Contaminant Negligibility

Contaminant Name	CAS Number	Air Quality Threshold (µg/m³)	Averaging Period	Guideline	ROAD1-A			ROAD1-B			ROAD2-A			ROAD2-B			ROAD3-A			ROAD3-B			ROAD4-A			ROAD4-B			ROAD5-A			ROAD5-B			ROAD6-A			ROAD6-B			ROAD7-A			ROAD7-B			Maximum Emission Rate (combined for 2022 and 2036)	Emission Threshold	Contaminant Negligible? (1)
	Distance from Site				20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m			20 m					
					Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold		Emission Rate	Emission Threshold				
					(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)	(g/s)	(g/s)	(Yes/No)
Nitrogen Oxides	10102-44-0	200	24	AAQC	6.20E-02	2.43E-02	No	8.21E-02	2.43E-02	No	1.47E-02	2.43E-02	Yes	1.49E-02	2.43E-02	Yes	3.26E-02	2.43E-02	No	4.32E-02	2.43E-02	No	2.45E-02	2.43E-02	No	3.24E-02	2.43E-02	No	4.57E-02	2.43E-02	No	6.05E-02	2.43E-02	No	1.87E-02	2.43E-02	Yes	2.49E-02	2.43E-02	No	7.15E-02	2.43E-02	No	9.54E-02	2.43E-02	No	6.23E-01	2.43E-02	No
Nitrogen Oxides	10102-44-0	400	1	AAQC	6.20E-02	2.00E-02	No	8.21E-02	2.00E-02	No	1.47E-02	2.00E-02	Yes	1.49E-02	2.00E-02	Yes	3.26E-02	2.00E-02	No	4.32E-02	2.00E-02	No	2.45E-02	2.00E-02	No	3.24E-02	2.00E-02	No	4.57E-02	2.00E-02	No	6.05E-02	2.00E-02	No	1.87E-02	2.00E-02	Yes	2.49E-02	2.00E-02	No	7.15E-02	2.00E-02	No	9.54E-02	2.00E-02	No	6.23E-01	2.00E-02	No
1,3-Butadiene	106-99-0	10	24	AAQC	4.61E-05	1.22E-03	Yes	5.27E-05	1.22E-03	Yes	1.09E-05	1.22E-03	Yes	1.11E-05	1.22E-03	Yes	2.43E-05	1.22E-03	Yes	2.77E-05	1.22E-03	Yes	1.82E-05	1.22E-03	Yes	2.08E-05	1.22E-03	Yes	3.40E-05	1.22E-03	Yes	3.88E-05	1.22E-03	Yes	1.39E-05	1.22E-03	Yes	1.60E-05	1.22E-03	Yes	5.32E-05	1.22E-03	Yes	6.12E-05	1.22E-03	Yes	4.29E-04	1.22E-03	Yes
1,3-Butadiene	106-99-0	2	annual	AAQC	4.61E-05	1.27E-03	Yes	5.27E-05	1.27E-03	Yes	1.09E-05	1.27E-03	Yes	1.11E-05	1.27E-03	Yes	2.43E-05	1.27E-03	Yes	2.77E-05	1.27E-03	Yes	1.82E-05	1.27E-03	Yes	2.08E-05	1.27E-03	Yes	3.40E-05	1.27E-03	Yes	3.88E-05	1.27E-03	Yes	1.39E-05	1.27E-03	Yes	1.60E-05	1.27E-03	Yes	5.32E-05	1.27E-03	Yes	6.12E-05	1.27E-03	Yes	4.29E-04	1.27E-03	Yes
Acrolein	107-02-8	0.4	24	AAQC	7.96E-05	4.87E-05	No	1.01E-04	4.87E-05	No	1.88E-05	4.87E-05	Yes	1.91E-05	4.87E-05	Yes	4.19E-05	4.87E-05	Yes	5.32E-05	4.87E-05	No	3.14E-05	4.87E-05	Yes	3.99E-05	4.87E-05	Yes	5.86E-05	4.87E-05	No	7.44E-05	4.87E-05	No	2.40E-05	4.87E-05	Yes	3.06E-05	4.87E-05	Yes	9.18E-05	4.87E-05	No	1.17E-04	4.87E-05	No	7.82E-04	4.87E-05	No
Acrolein	107-02-8	4.5	1	AAQC	7.96E-05	2.25E-04	Yes	1.01E-04	2.25E-04	Yes	1.88E-05	2.25E-04	Yes	1.91E-05	2.25E-04	Yes	4.19E-05	2.25E-04	Yes	5.32E-05	2.25E-04	Yes	3.14E-05	2.25E-04	Yes	3.99E-05	2.25E-04	Yes	5.86E-05	2.25E-04	Yes	7.44E-05	2.25E-04	Yes	2.40E-05	2.25E-04	Yes	3.06E-05	2.25E-04	Yes	9.18E-05	2.25E-04	Yes	1.17E-04	2.25E-04	Yes	7.82E-04	2.25E-04	No
Formaldehyde	50-00-0	65	24	AAQC	1.01E-03	7.91E-03	Yes	1.27E-03	7.91E-03	Yes	2.19E-04	7.91E-03	Yes	2.43E-04	7.91E-03	Yes	5.32E-04	7.91E-03	Yes	6.67E-04	7.91E-03	Yes	3.99E-04	7.91E-03	Yes	5.00E-04	7.91E-03	Yes	7.45E-04	7.91E-03	Yes	9.33E-04	7.91E-03	Yes	1.04E-04	7.91E-03	Yes	1.84E-04	7.91E-03	Yes	1.17E-03	7.91E-03	Yes	1.47E-03	7.91E-03	Yes	9.86E-03	7.91E-03	No
Benzo(a)Pyrene gas	50-32-8	5.00E-05	24	AAQC	3.05E-09	6.09E-09	Yes	3.00E-09	6.09E-09	Yes	7.23E-10	6.09E-09	Yes	7.33E-10	6.09E-09	Yes	1.61E-09	6.09E-09	Yes	1.58E-09	6.09E-09	Yes	1.20E-09	6.09E-09	Yes	1.19E-09	6.09E-09	Yes	2.25E-09	6.09E-09	Yes	2.21E-09	6.09E-09	Yes	9.18E-10	6.09E-09	Yes	9.11E-10	6.09E-09	Yes	3.52E-09	6.09E-09	Yes	3.49E-09	6.09E-09	Yes	2.64E-08	6.09E-09	No
Benzo(a)Pyrene gas	50-32-8	1.00E-05	annual	AAQC	3.05E-09	6.35E-09	Yes	3.00E-09	6.35E-09	Yes	7.23E-10	6.35E-09	Yes	7.33E-10	6.35E-09	Yes	1.61E-09	6.35E-09	Yes	1.58E-09	6.35E-09	Yes	1.20E-09	6.35E-09	Yes	1.19E-09	6.35E-09	Yes	2.25E-09	6.35E-09	Yes	2.21E-09	6.35E-09	Yes	9.18E-10	6.35E-09	Yes	9.11E-10	6.35E-09	Yes	3.52E-09	6.35E-09	Yes	3.49E-09	6.35E-09	Yes	2.64E-08	6.35E-09	No
Carbon Monoxide	630-08-0	36200	1	AAQC	1.62E+00	1.81E+00	Yes	1.64E+00	1.81E+00	Yes	3.84E-01	1.81E+00	Yes	3.89E-01	1.81E+00	Yes	8.53E-01	1.81E+00	Yes	8.63E-01	1.81E+00	Yes	6.39E-01	1.81E+00	Yes	6.47E-01	1.81E+00	Yes	1.19E+00	1.81E+00	Yes	1.21E+00	1.81E+00	Yes	4.88E-01	1.81E+00	Yes	4.97E-01	1.81E+00	Yes	1.87E+00	1.81E+00	No	1.90E+00	1.81E+00	No	1.42E+01	1.81E+00	No
Carbon Monoxide	630-08-0	15700	8	AAQC	1.62E+00	1.41E+00	No	1.64E+00	1.41E+00	No	3.84E-01	1.41E+00	Yes	3.89E-01	1.41E+00	Yes	8.53E-01	1.41E+00	Yes	8.63E-01	1.41E+00	Yes	6.39E-01	1.41E+00	Yes	6.47E-01	1.41E+00	Yes	1.19E+00	1.41E+00	Yes	1.21E+00	1.41E+00	Yes	4.88E-01	1.41E+00	Yes	4.97E-01	1.41E+00	Yes	1.87E+00	1.41E+00	No	1.90E+00	1.41E+00	No	1.42E+01	1.41E+00	No
Benzene	71-43-2	2.3	24	AAQC	6.68E-04	2.80E-04	No	6.80E-04	2.80E-04	No	1.58E-04	2.80E-04	Yes	1.60E-04	2.80E-04	Yes	3.52E-04	2.80E-04	No	3.58E-04	2.80E-04	No	2.64E-04	2.80E-04	Yes	2.68E-04	2.80E-04	Yes	4.92E-04	2.80E-04	No	5.01E-04	2.80E-04	No	2.01E-04	2.80E-04	Yes	2.06E-04	2.80E-04	Yes	7.71E-04	2.80E-04	No	7.90E-04	2.80E-04	No	5.87E-03	2.80E-04	No
Benzene	71-43-2	0.45	annual	AAQC	6.68E-04	2.86E-04	No	6.80E-04	2.86E-04	Yes	1.58E-04	2.86E-04	Yes	1.60E-04	2.86E-04	Yes	3.52E-04	2.86E-04	No	3.58E-04	2.86E-04	No	2.64E-04	2.86E-04	Yes	2.68E-04	2.86E-04	Yes	4.92E-04	2.86E-04	No	5.01E-04	2.86E-04	No	2.01E-04	2.86E-04	Yes	2.06E-04	2.86E-04	Yes	7.71E-04	2.86E-04	No	7.90E-04	2.86E-04	No	5.87E-03	2.86E-04	No
Acetaldehyde	75-07-0	500	24	AAQC	5.62E-04	6.09E-02	Yes	7.06E-04	6.09E-02	Yes	1.33E-04	6.09E-02	Yes	1.35E-04	6.09E-02	Yes	2.96E-04	6.09E-02	Yes	3.71E-04	6.09E-02	Yes	2.22E-04	6.09E-02	Yes	2.79E-04	6.09E-02	Yes	4.14E-04	6.09E-02	Yes	5.20E-04	6.09E-02	Yes	1.69E-04	6.09E-02	Yes	2.14E-04	6.09E-02	Yes	6.49E-04	6.09E-02	Yes	8.20E-04	6.09E-02	Yes	5.49E-03	6.09E-02	Yes
Acetaldehyde	75-07-0	500	0.5	AAQC	5.62E-04	2.06E-02	Yes	7.06E-04	2.06E-02	Yes	1.33E-04	2.06E-02	Yes	1.35E-04	2.06E-02	Yes	2.96E-04	2.06E-02	Yes	3.71E-04	2.06E-02	Yes	2.22E-04	2.06E-02	Yes	2.79E-04	2.06E-02	Yes	4.14E-04	2.06E-02	Yes	5.20E-04	2.06E-02	Yes	1.69E-04	2.06E-02	Yes	2.14E-04	2.06E-02	Yes	6.49E-04	2.06E-02	Yes	8.20E-04	2.06E-02	Yes	5.49E-03	2.06E-02	Yes
PM10	N/A(2)	50	24	AAQC	2.58E-01	6.09E-03	No	3.13E-01	6.09E-03	No	6.10E-02	6.09E-03	No	6.15E-02	6.09E-03	No	1.36E-01	6.09E-03	No	1.65E-01	6.09E-03	No	1.02E-01	6.09E-03	No	1.24E-01	6.09E-03	No	1.90E-01	6.09E-03	No	2.31E-01	6.09E-03	No	1.00E-01	6.09E-03	No	3.15E-01	6.09E-03	No	3.85E-01	6.09E-03	No	2.52E+00	6.09E-03	No
PM2.5	N/A(1)	27	24	AAQC	6.43E-02	3.29E-03	No	7.84E-02	3.29E-03	No	1.52E-02	3.29E-03	No	1.54E-02	3.29E-03	No	3.39E-02	3.29E-03	No	4.13E-02	3.29E-03	No	2.54E-02	3.29E-03	No	3.10E-02	3.29E-03	No	4.76E-02	3.29E-03	No	5.78E-02	3.29E-03	No	2.05E-02	3.29E-03	No	2.52E-02	3.29E-03	No	7.88E-02	3.29E-03	No	9.65E-02	3.29E-03	No	6.31E-01	3.29E-03	No
PM2.5	N/A(1)	8.8	annual	AAQC	6.43E-02	5.59E-03	No	7.84E-02	5.59E-03	No	1.52E-02	5.59E-03	No	1.54E-02	5.59E-03	No	3.39E-02	5.59E-03	No	4.13E-02	5.59E-03	No	2.54E-02	5.59E-03	No	3.10E-02	5.59E-03	No	4.76E-02	5.59E-03	No	5.78E-02	5.59E-03	No	2.05E-02	5.59E-03	No	2.52E-02	5.59E-03	No	7.88E-02	5.59E-03	No	9.65E-02	5.59E-03	No	6.31E-01	5.59E-03	No

Notes:

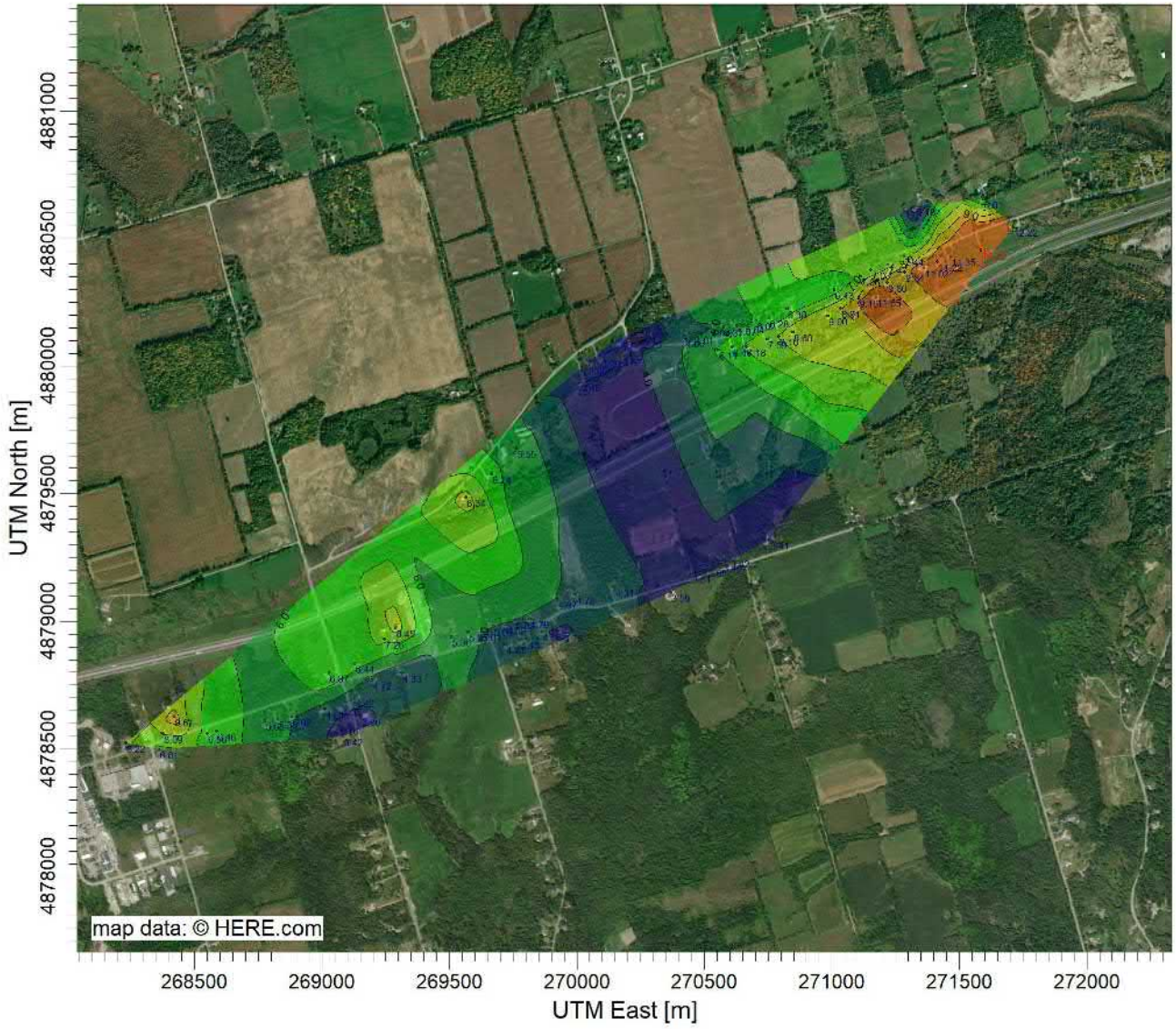
(1) If the Total Emission Rate is less than the Emission Threshold then impacts can be considered negligible. Significant contaminants (highlighted in gray above) have been assessed further.

APPENDIX

C AERMOD OUTPUTS

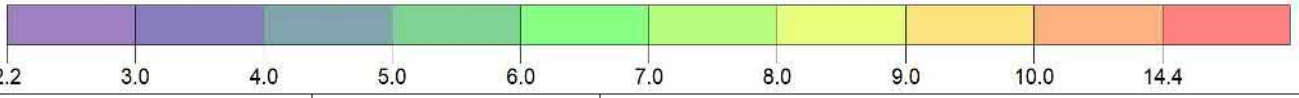
PROJECT TITLE:

Highway 401 Brighton 2022
Section 1 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

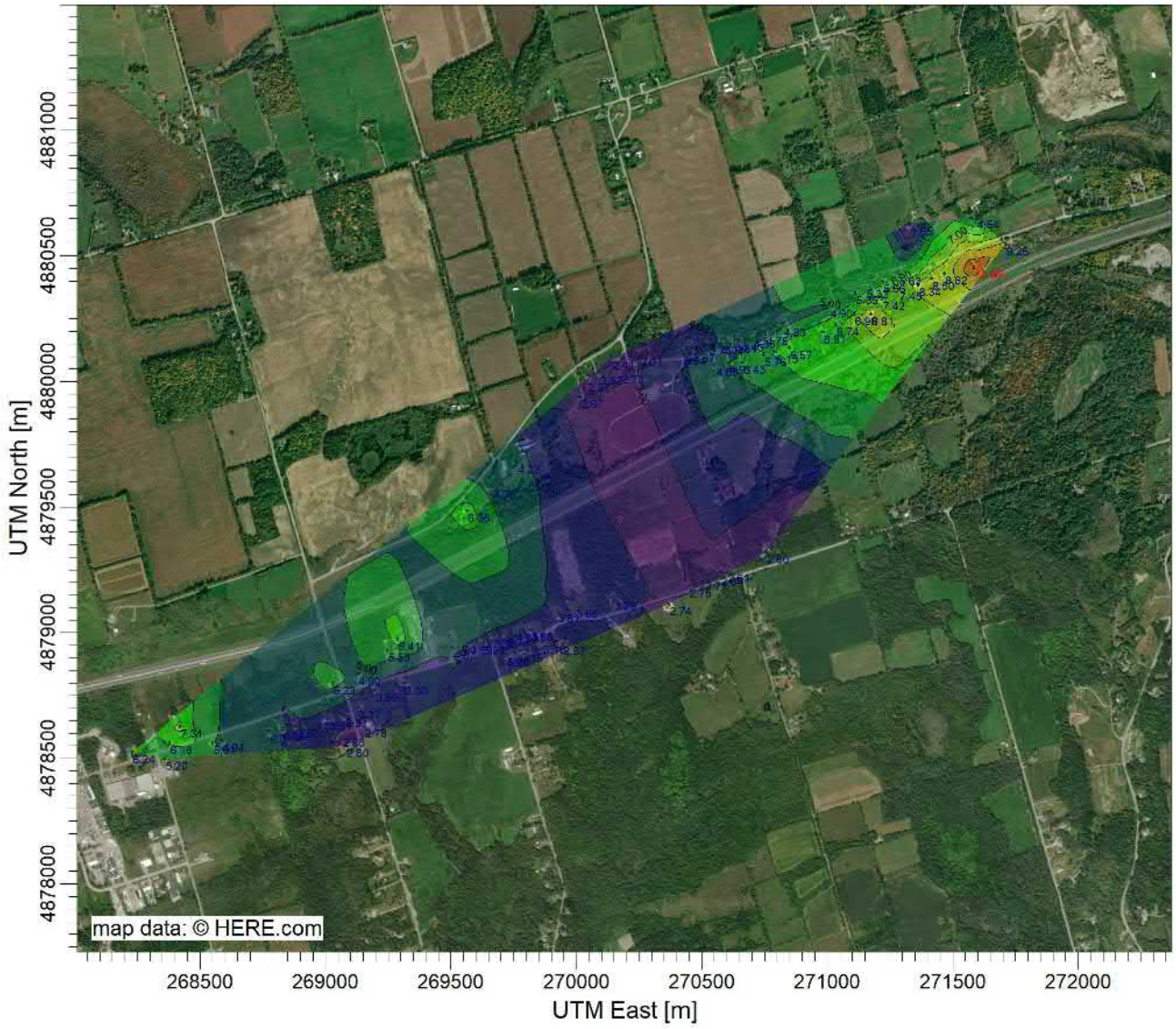
Max: 14.4 [ug/m^3] at (271584.14, 4880454.80)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1 hour	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:26,995 0 1 km	
	MAX: **14.4 ug/m^3**	DATE: **21-Feb-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 1 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

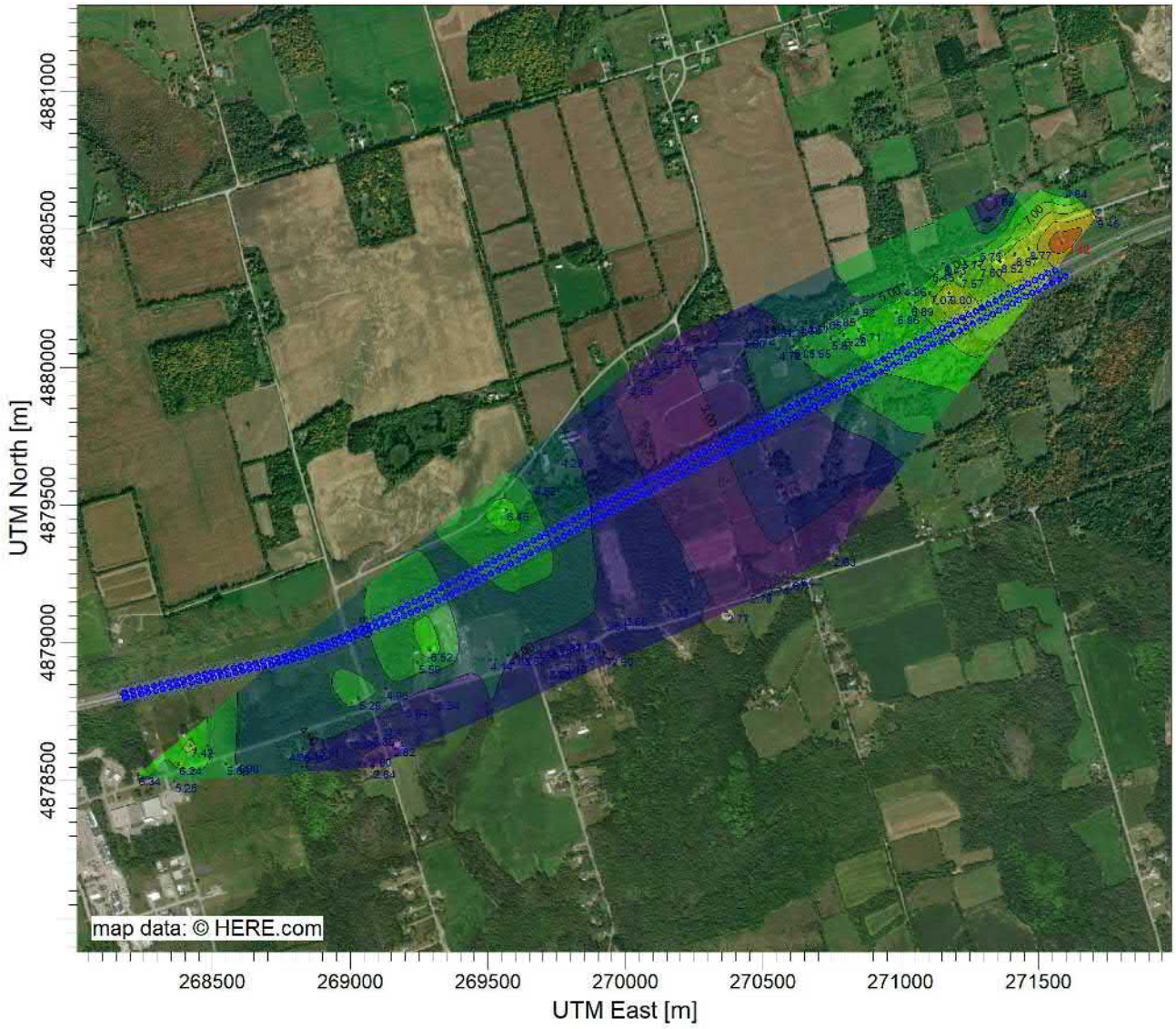
Max: 10.99 [ug/m^3] at (271584.14, 4880454.80)

1.65 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 10.99

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:27,430 0 1 km	
	MAX: **10.99 ug/m^3**	DATE: **21-Feb-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 1 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

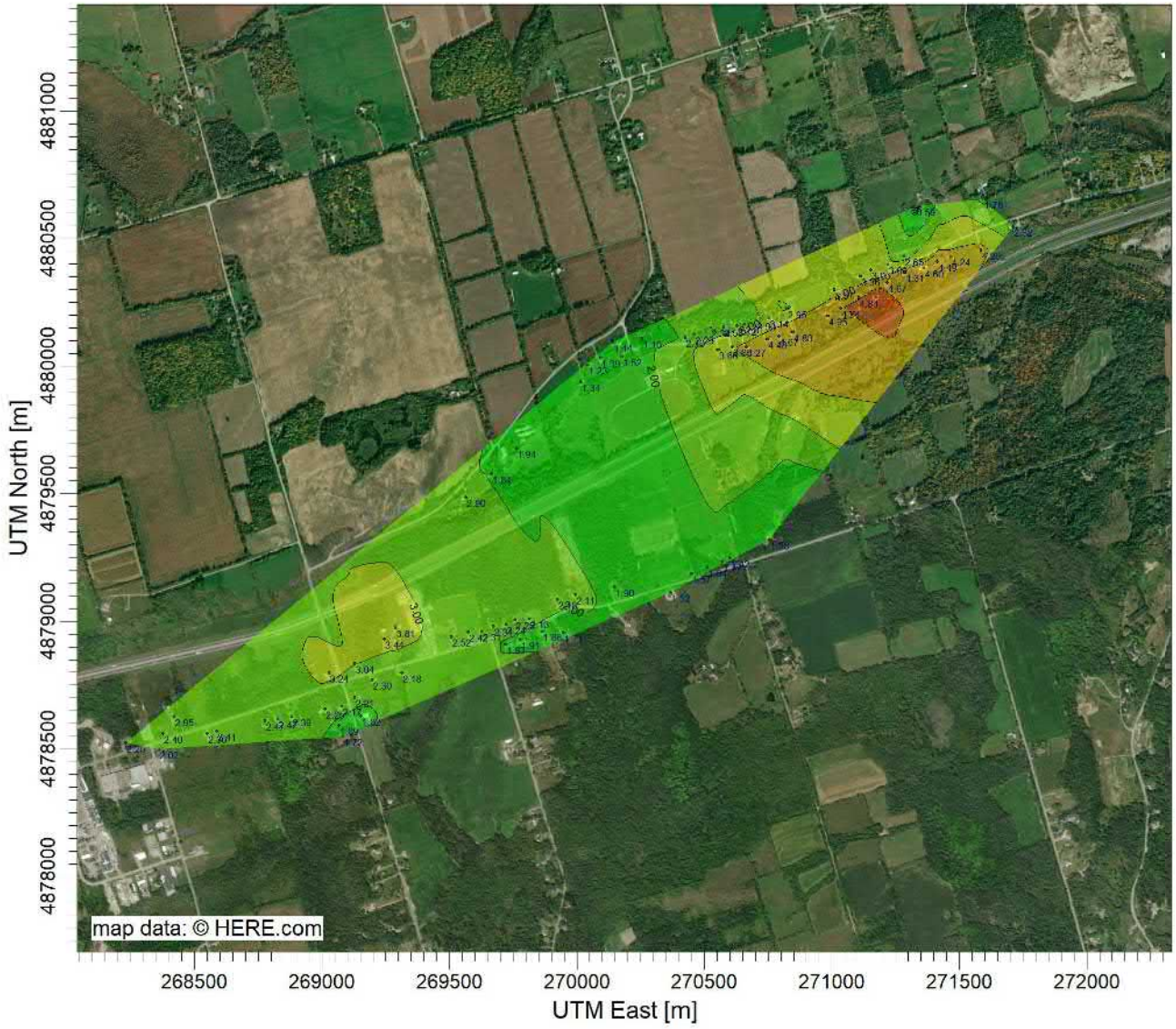
Max: 11.12 [ug/m^3] at (271584.14, 4880454.80)

1.69 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.12

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 0 1 km	
	MAX: **11.12 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 1 - NO2



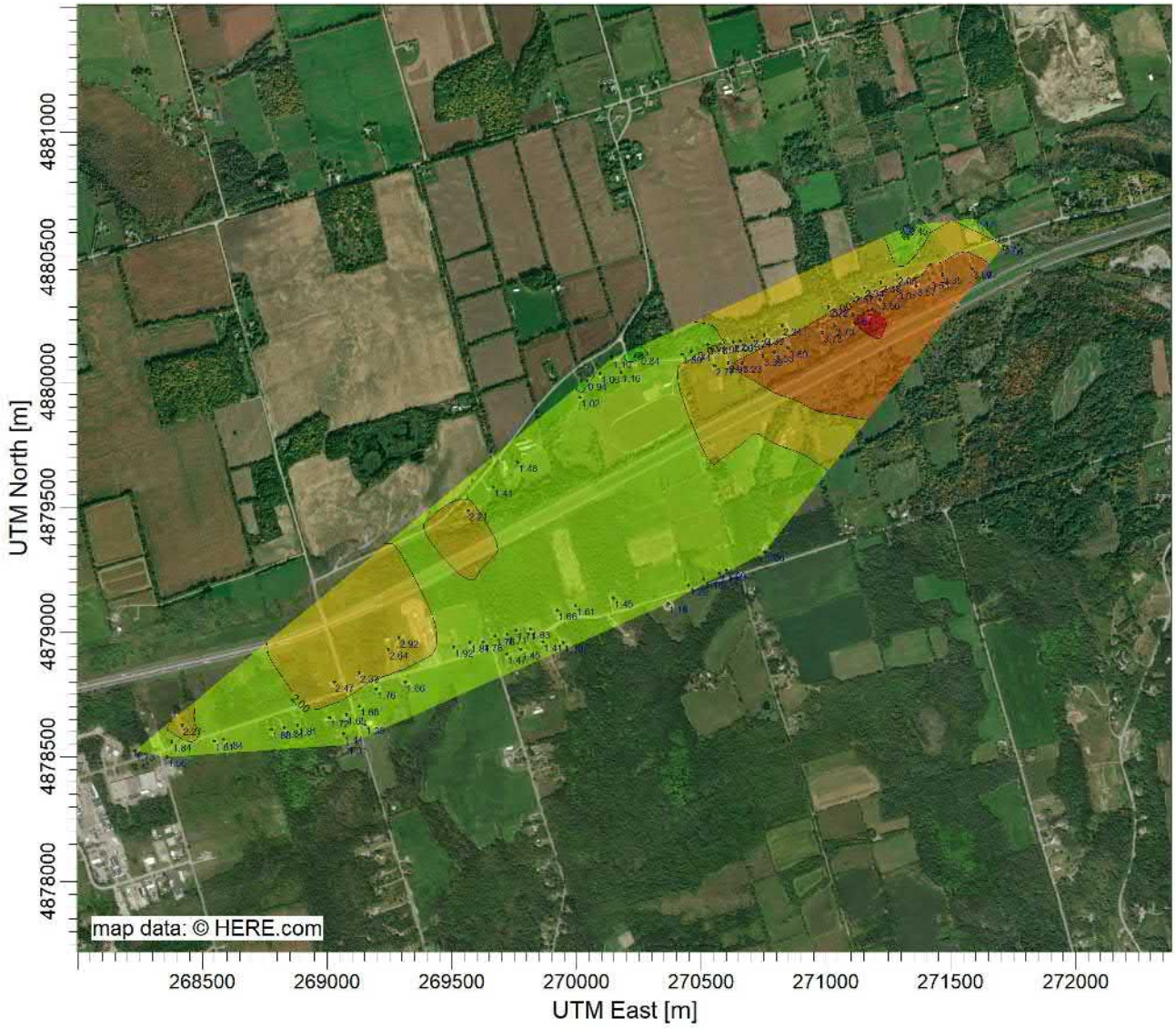
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.72 [ug/m^3] at (271174.38, 4880269.62)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hour	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:26,995 (0 — 1 km)	
	MAX: **5.72 ug/m^3**	DATE: **21-Feb-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 1 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

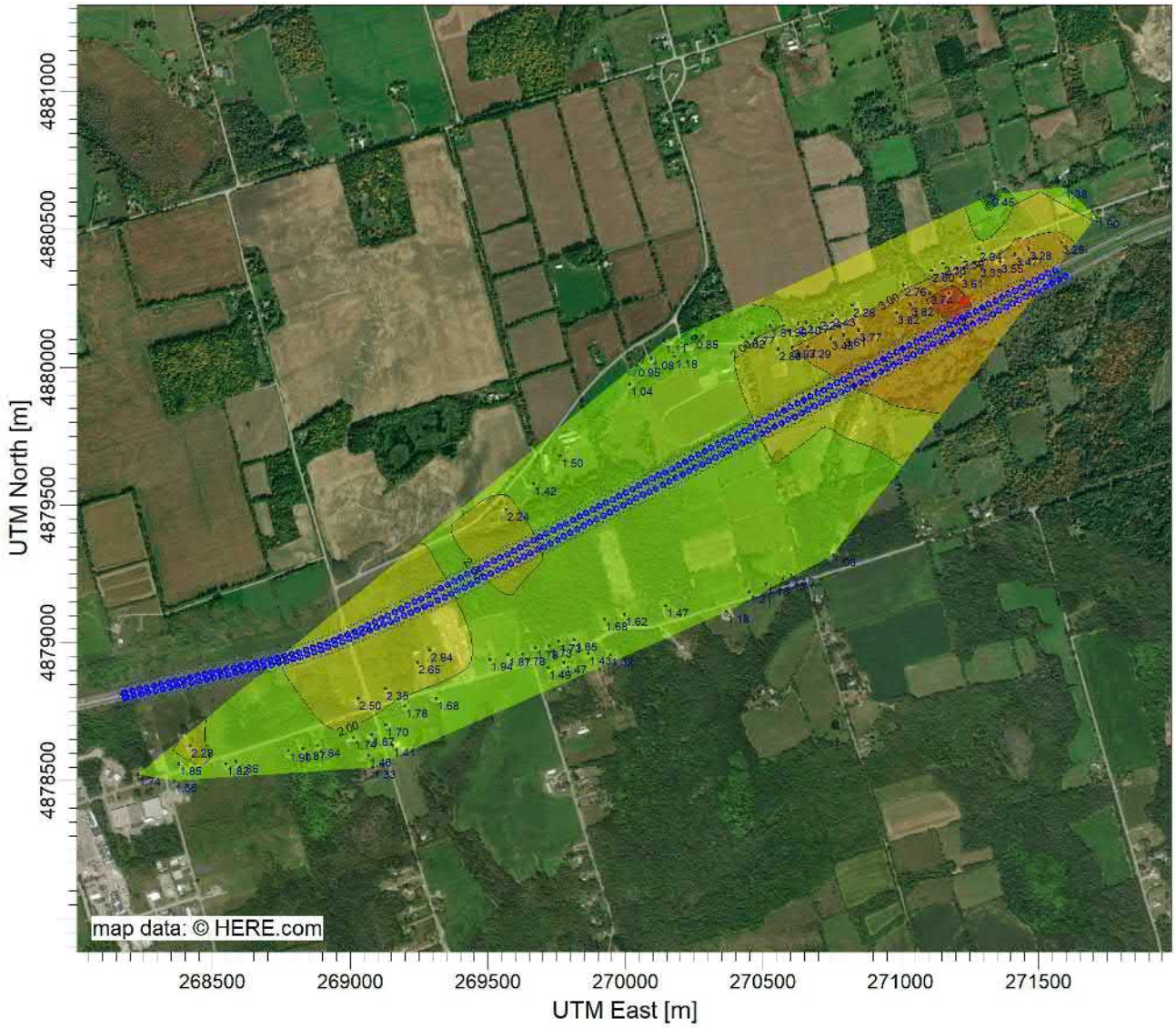
Max: 4.33 [ug/m^3] at (271174.38, 4880269.62)

0.30 0.50 0.60 0.80 0.90 1.00 2.00 3.00 4.00

COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:27,578 0 1 km	
	MAX: **4.33 ug/m^3**	DATE: **21-Feb-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 1 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

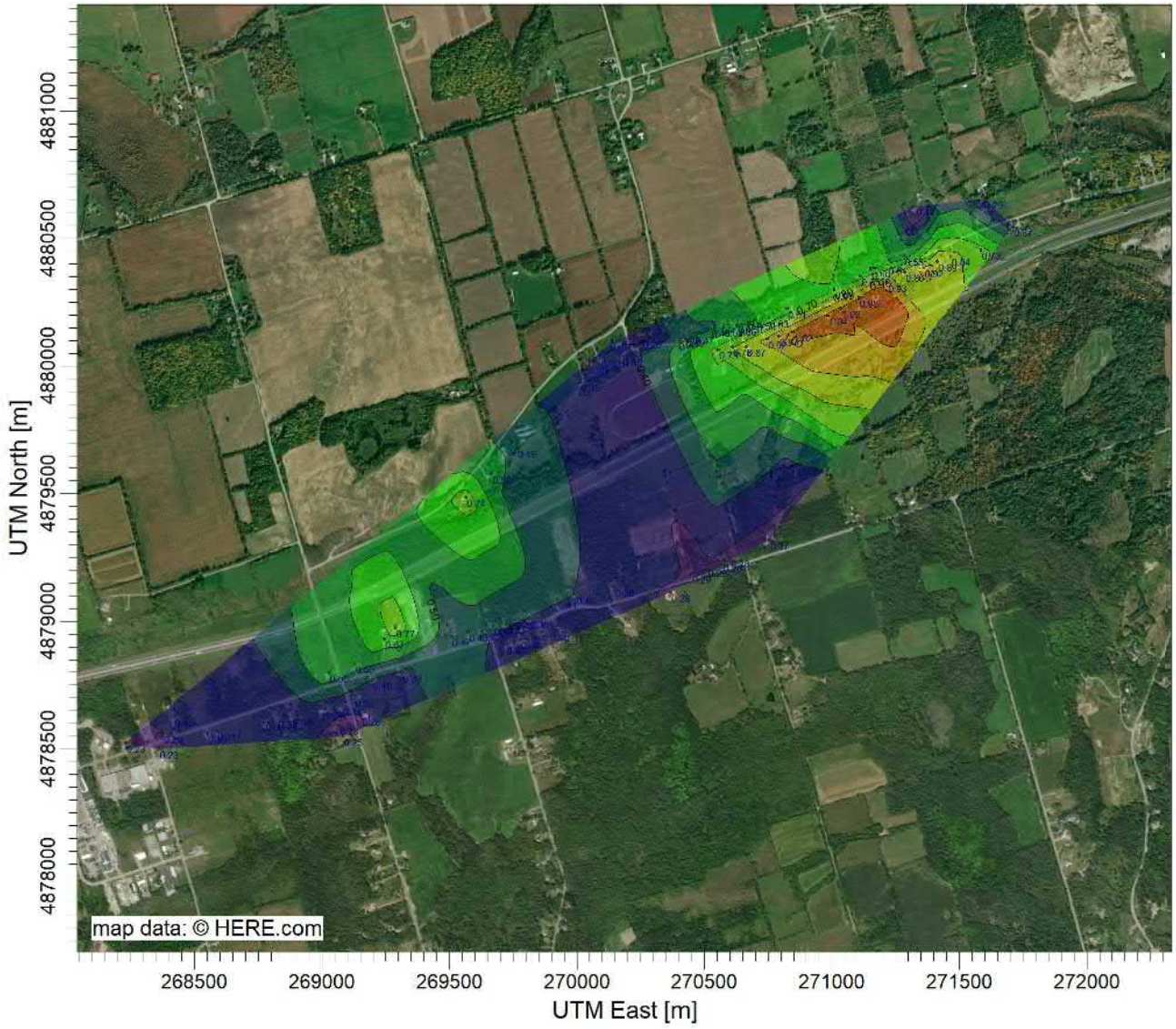
Max: 4.42 [ug/m^3] at (271174.38, 4880269.62)

0.45 0.50 0.60 0.70 0.80 0.90 1.00 2.00 3.00 4.00 4.42

COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 0 1 km	
	MAX: **4.42 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

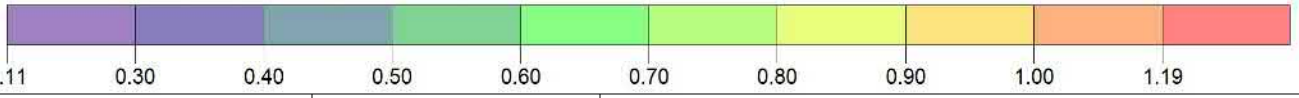
PROJECT TITLE:

Highway 401 Brighton 2022
Section 1 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

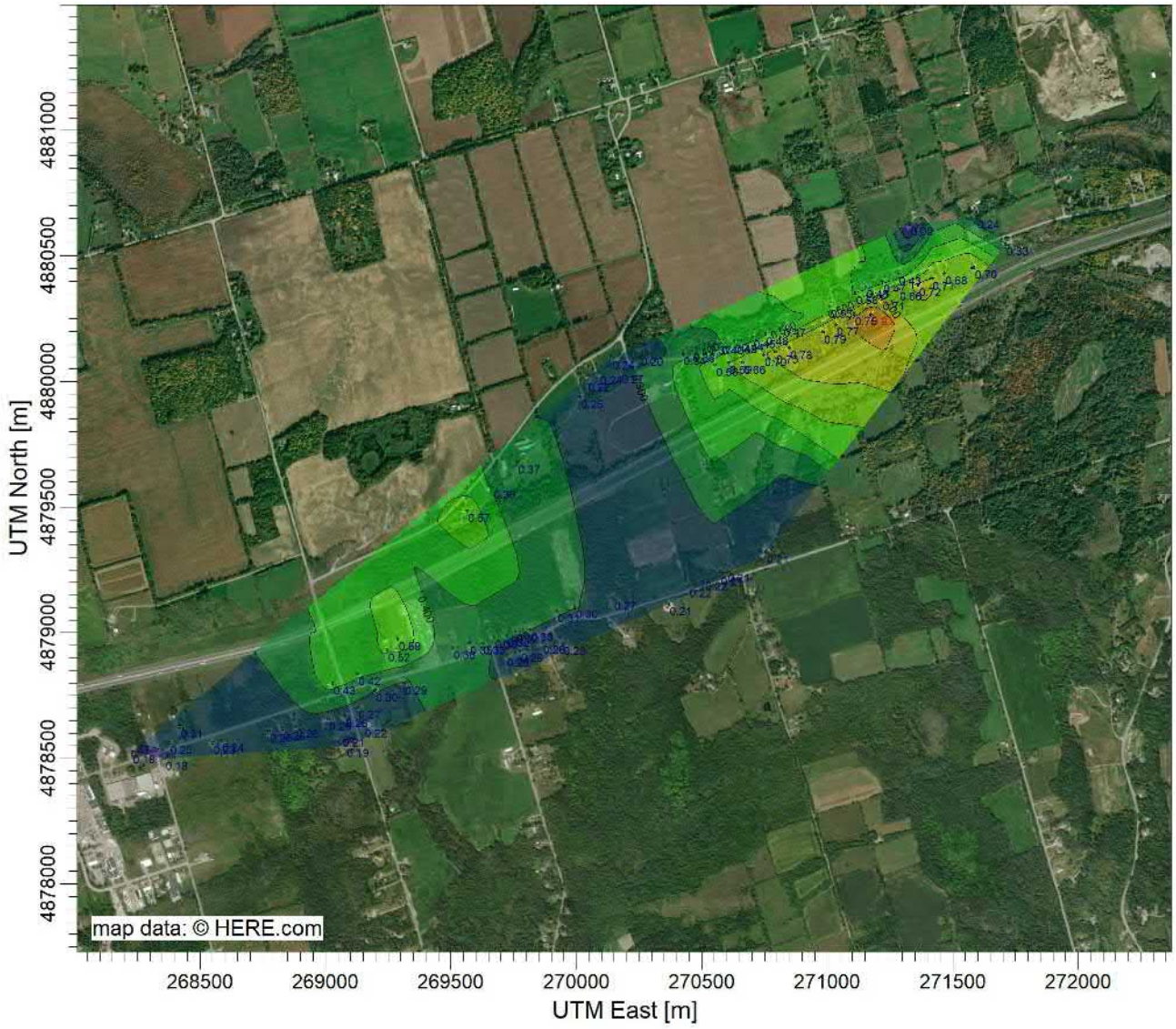
Max: 1.19 [ug/m^3] at (271174.38, 4880269.62)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:26,995 0 1 km	
	MAX: **1.19 ug/m^3**	DATE: **21-Feb-23**	PROJECT NO.: **17M-01712-11**

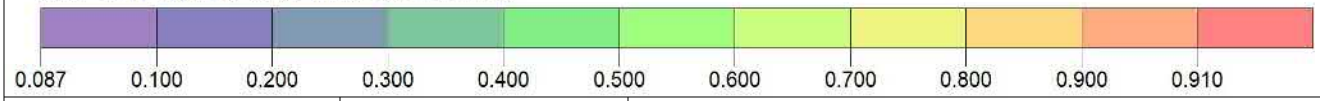
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 1 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

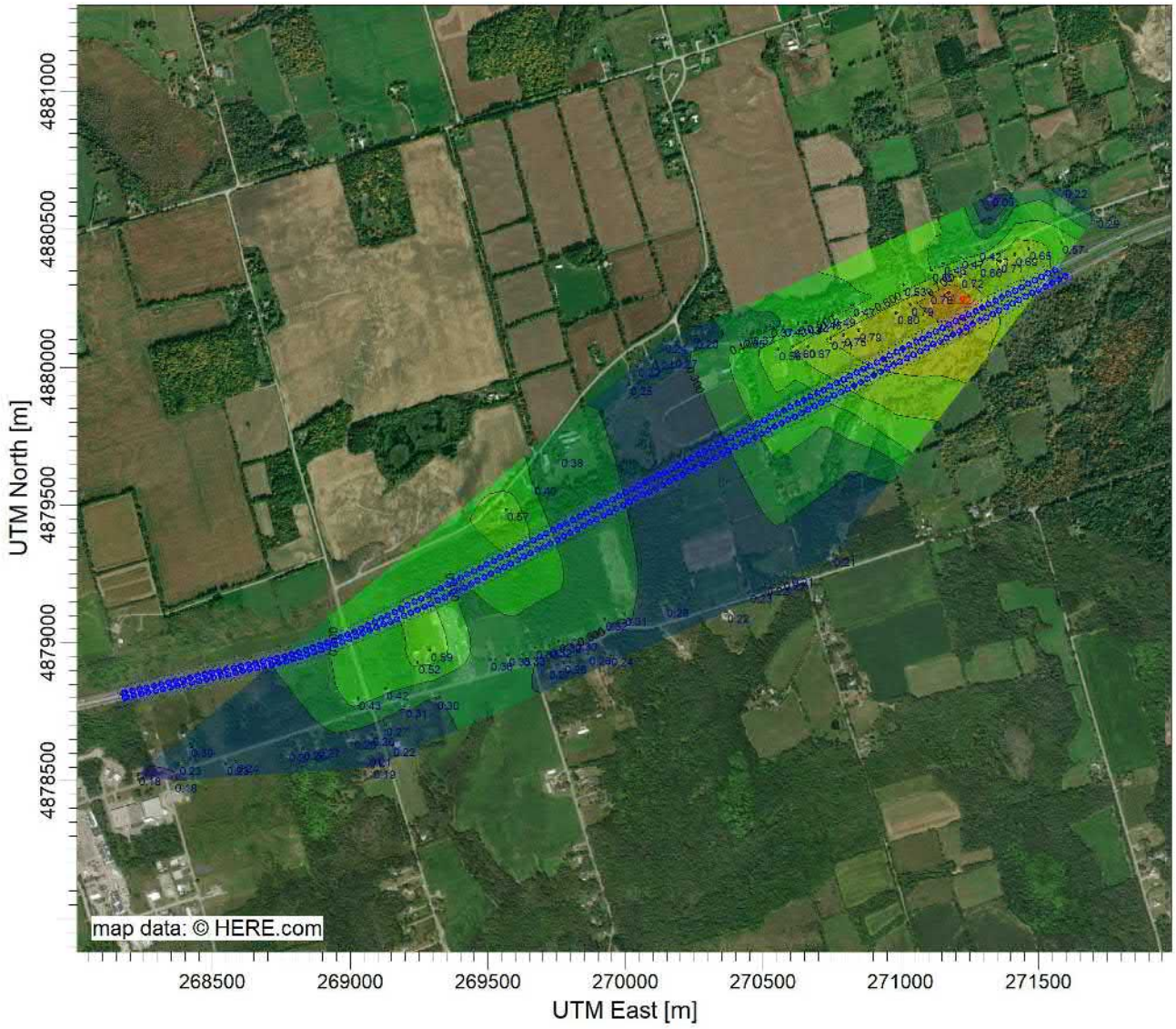
Max: 0.910 [ug/m^3] at (271174.38, 4880269.62)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:27,430 0 1 km	
	MAX: **0.910 ug/m^3**	DATE: **21-Feb-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 1 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

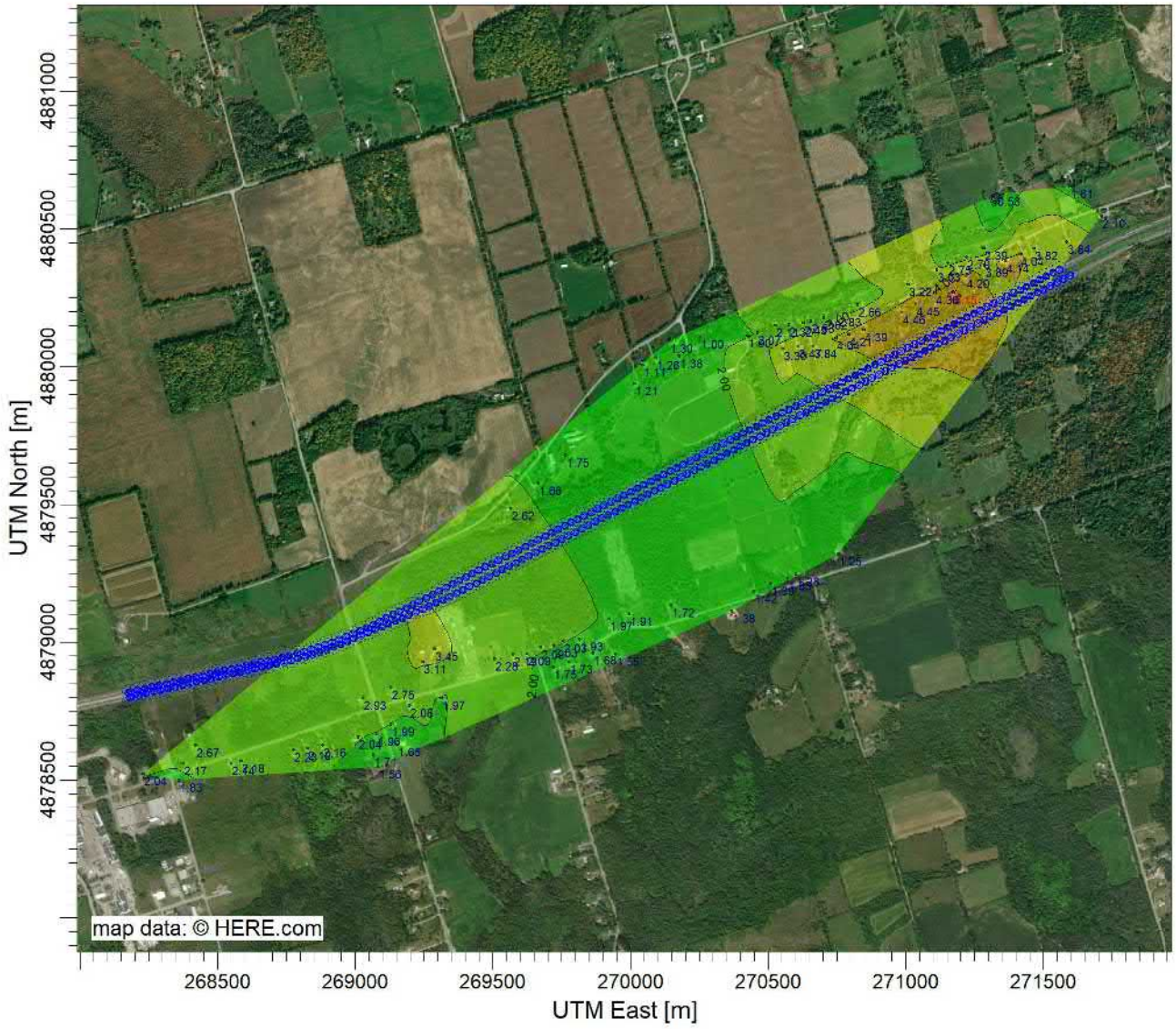
Max: 0.922 [ug/m^3] at (271174.38, 4880269.62)

0.086 0.100 0.200 0.300 0.400 0.500 0.600 0.700 0.800 0.900 0.922

COMMENTS: NO2 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 0 1 km	
	MAX: **0.922 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 1 - PM2.5



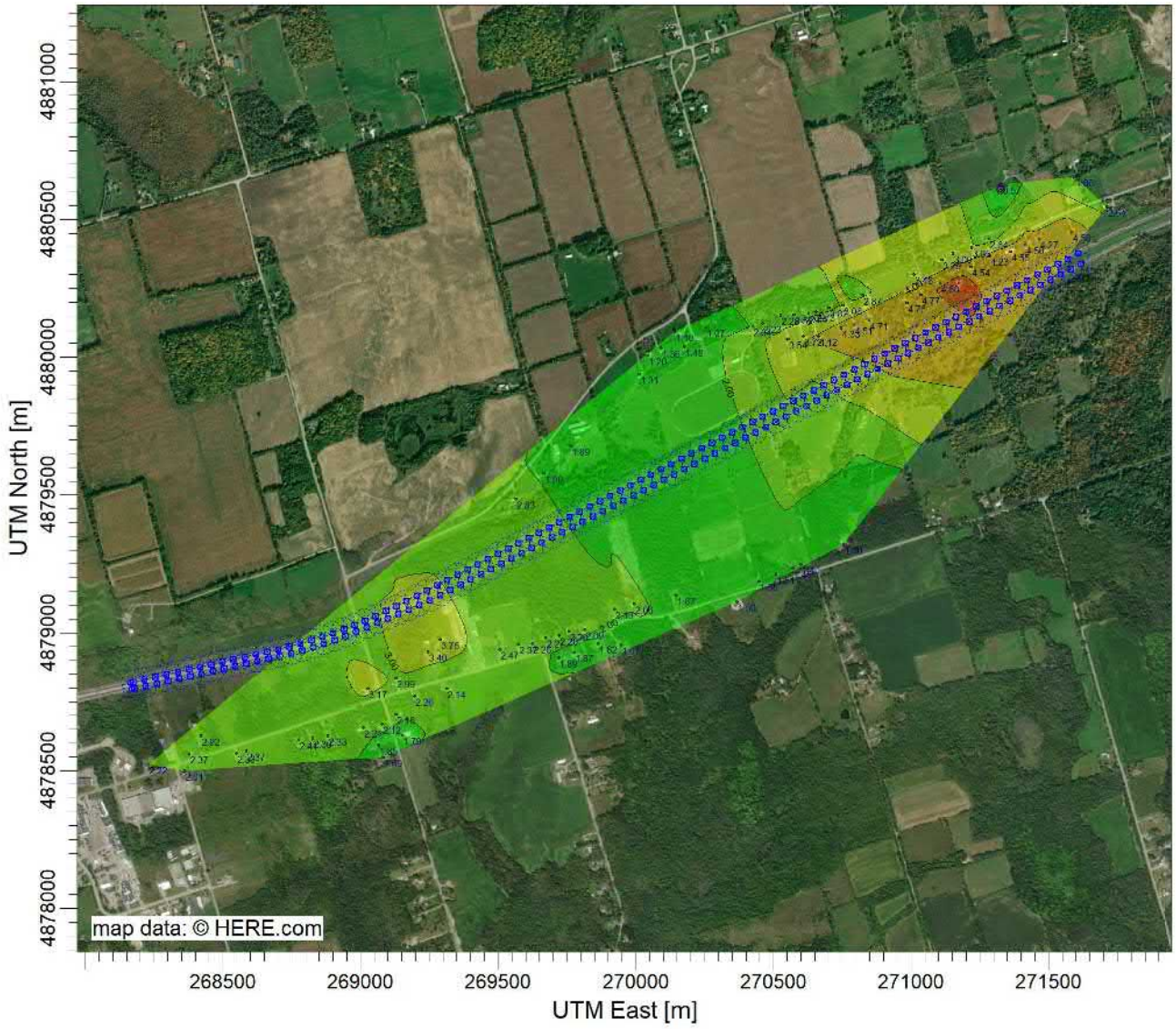
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.15 [ug/m^3] at (271174.38, 4880269.62)

COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **5.15 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 1 - PM2.5



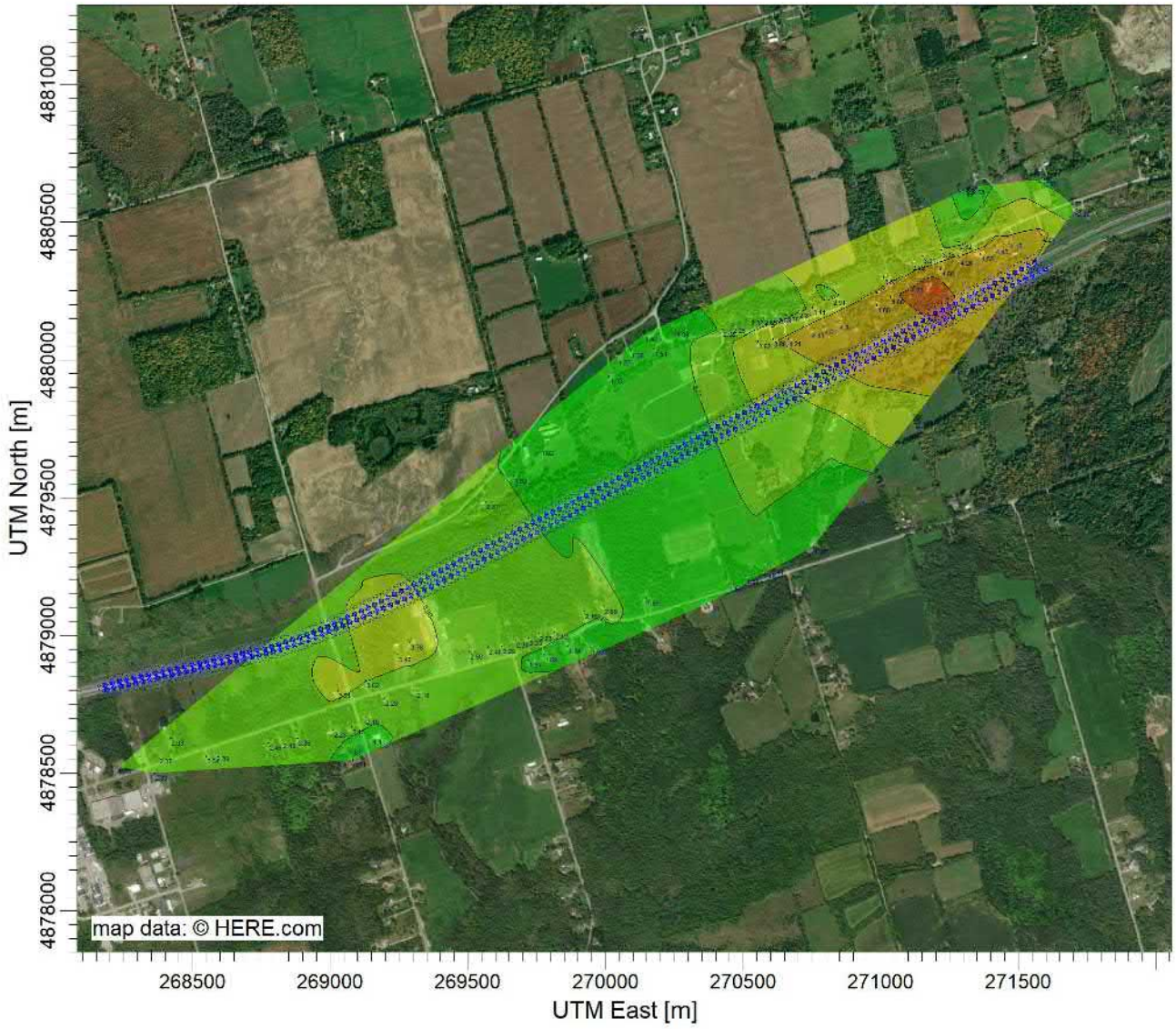
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.52 [ug/m^3] at (271174.38, 4880269.62)

COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **5.52 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 1 - PM2.5



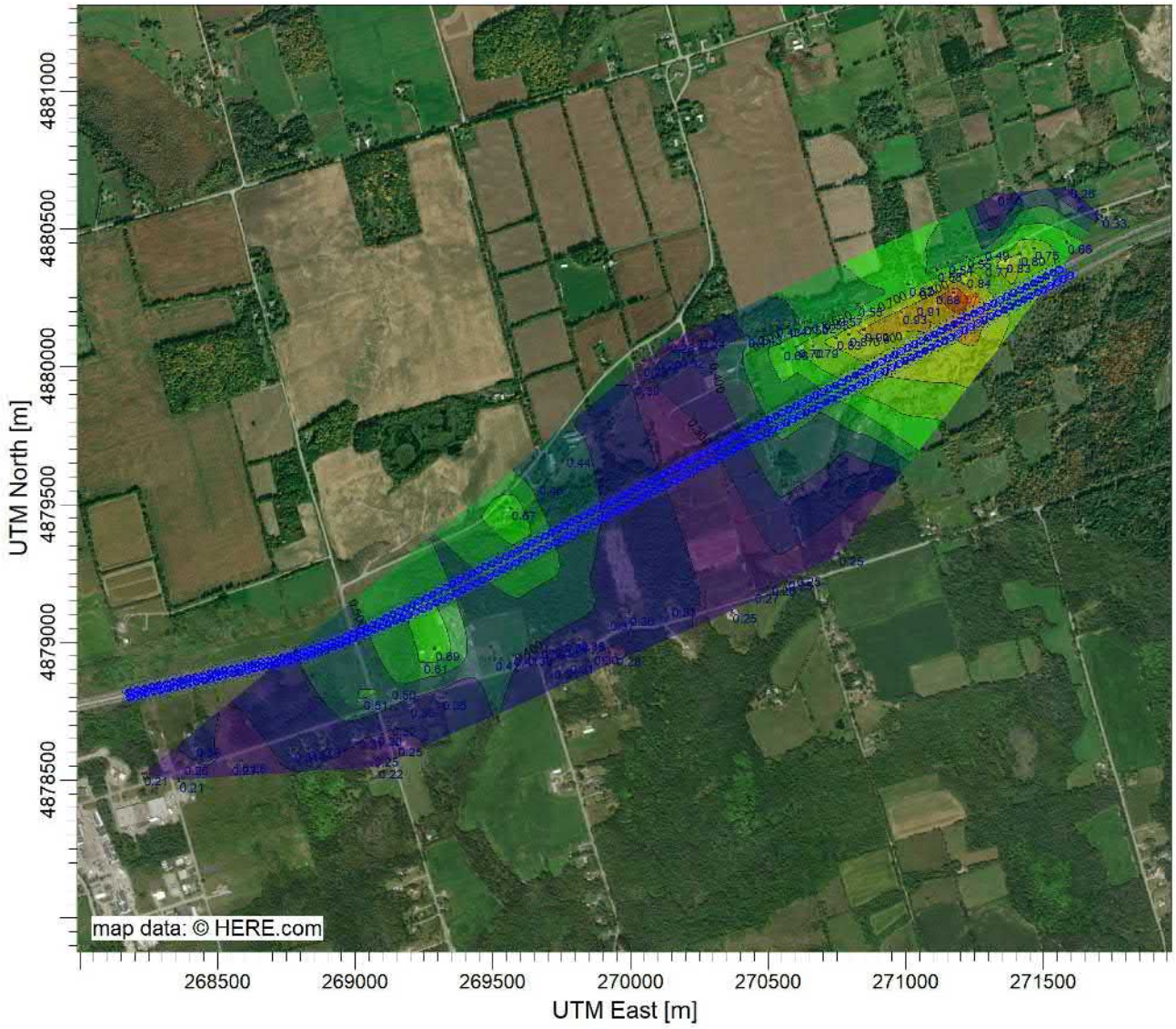
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.64 [ug/m^3] at (271174.38, 4880269.62)

COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **5.64 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

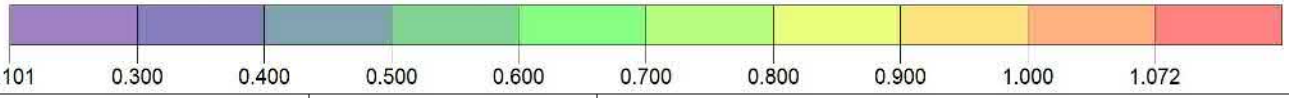
PROJECT TITLE:

Highway 401 Brighton 2022
Section 1 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

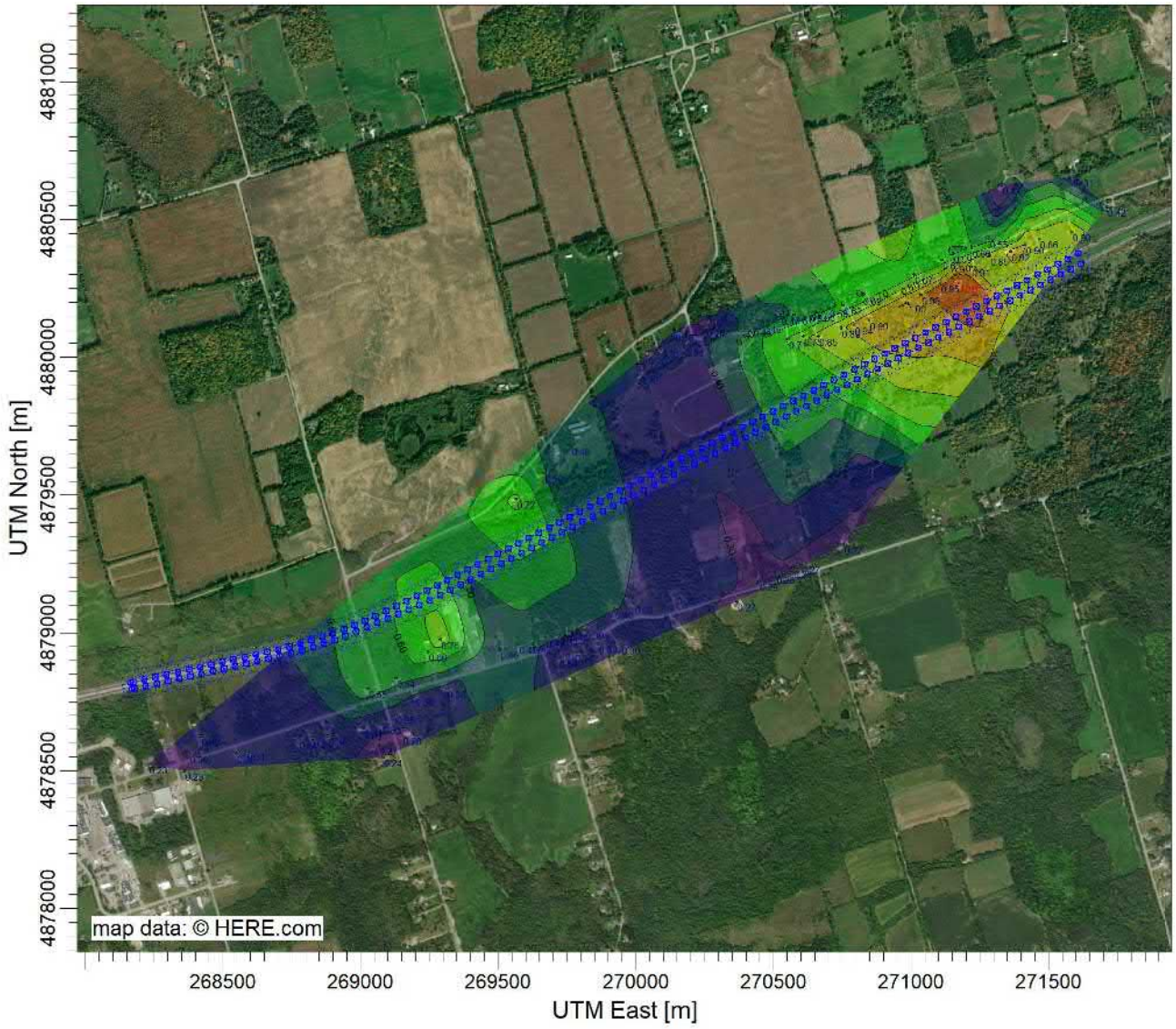
Max: 1.072 [ug/m^3] at (271174.38, 4880269.62)



COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 0 1 km	
	MAX: **1.072 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

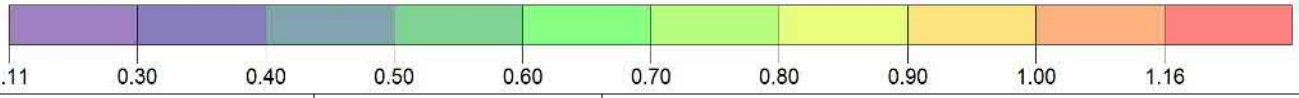
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 1 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

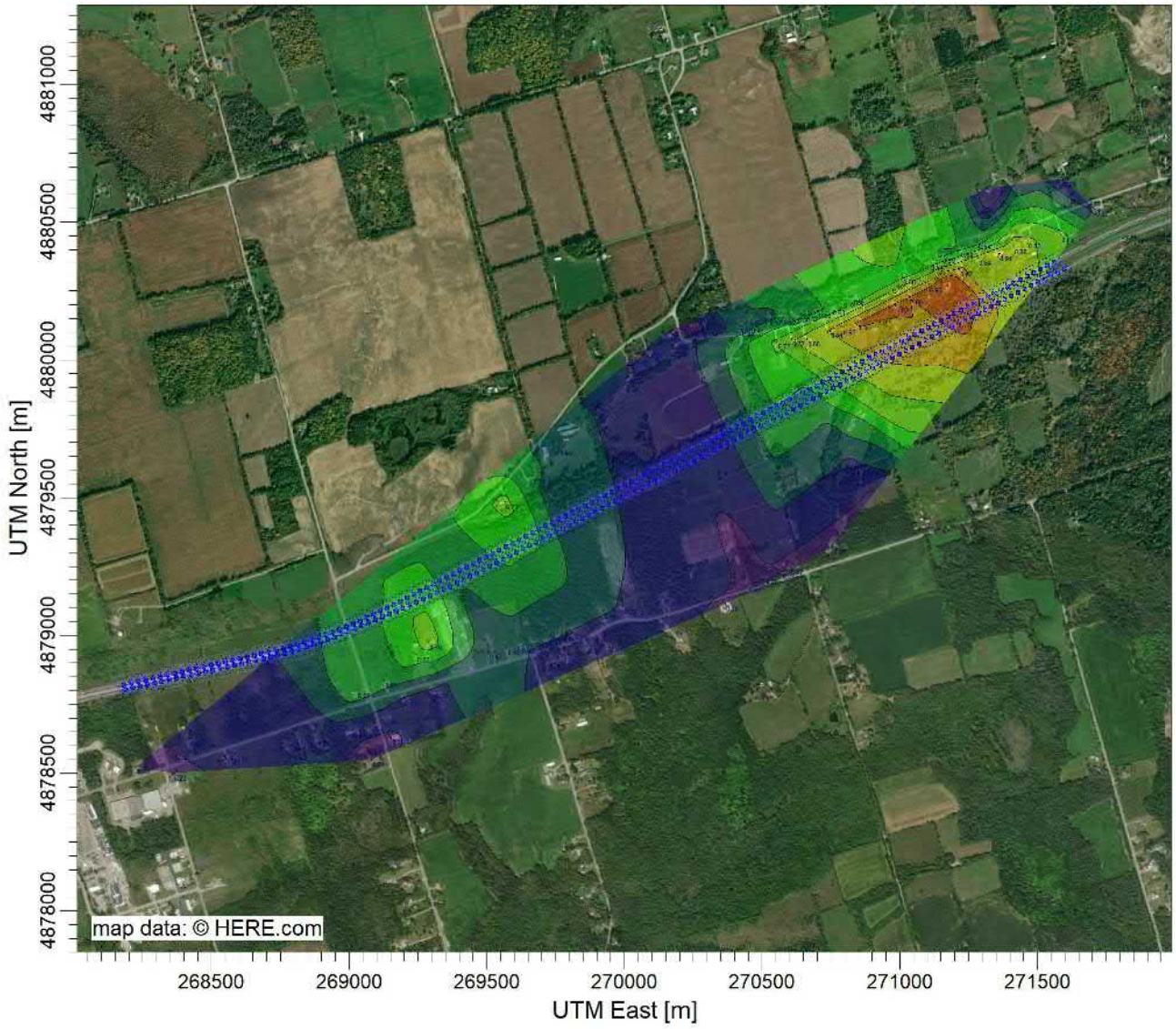
Max: 1.16 [ug/m^3] at (271174.38, 4880269.62)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **1.16 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

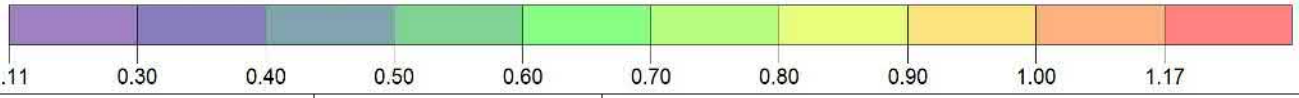
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 1 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

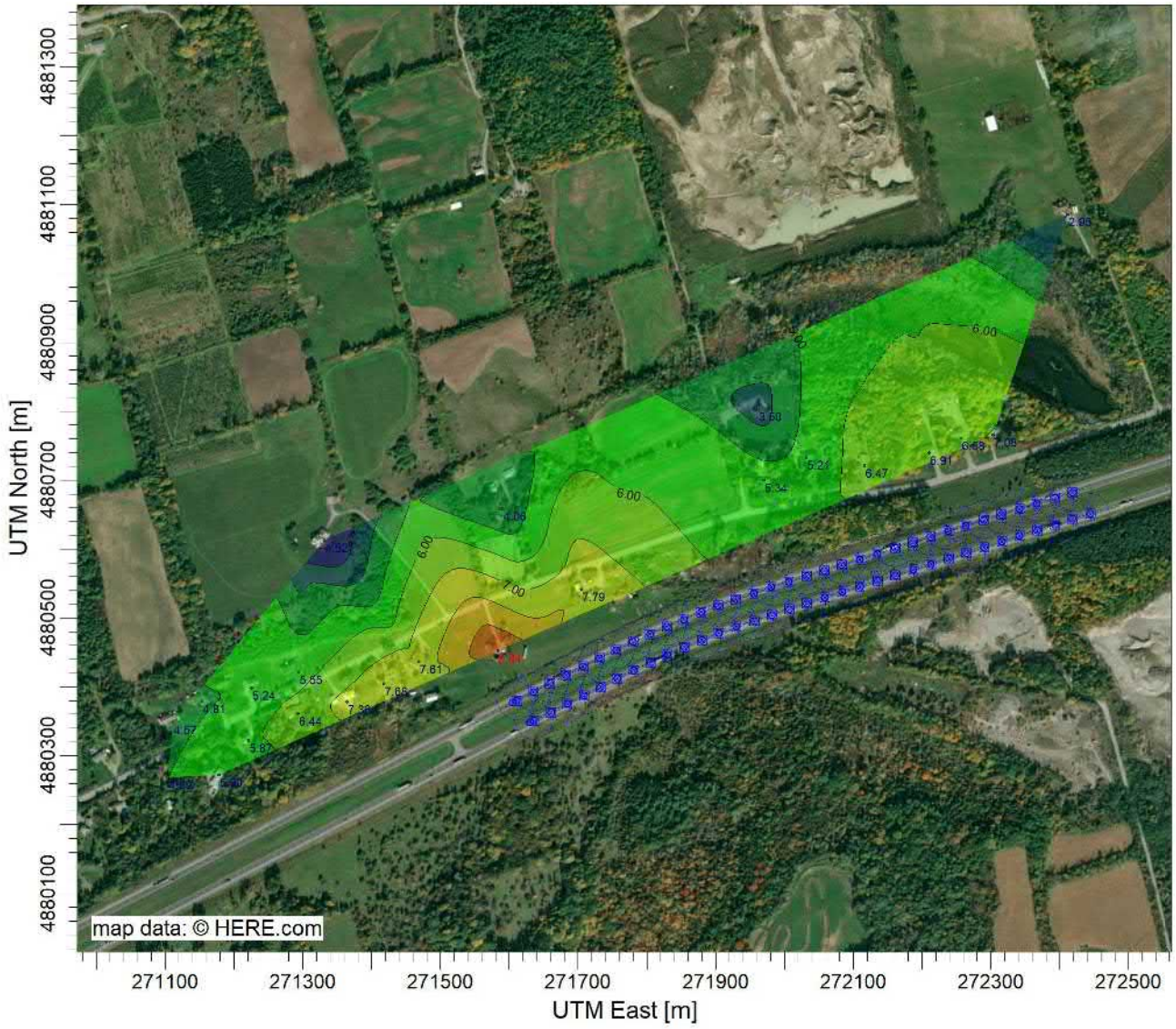
Max: 1.17 [ug/m^3] at (271174.38, 4880269.62)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **83**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:25,000 (0 — 1 km)	
	MAX: **1.17 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 2 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 9.94 [ug/m^3] at (271583.93, 4880452.60)

1.52 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 9.94

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **9.94 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 2 - NO2

PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

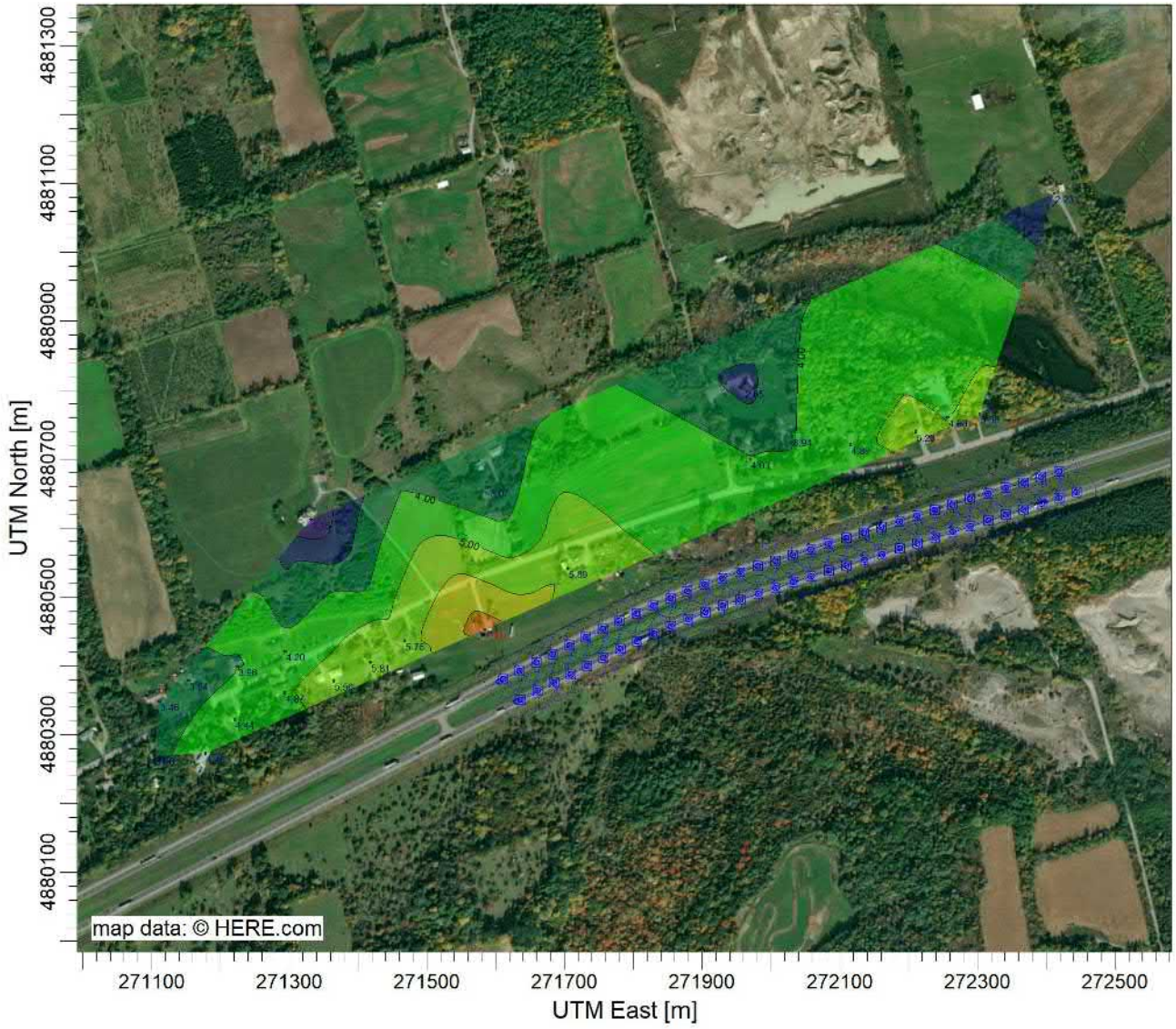
Max: 7.24 [ug/m^3] at (271583.93, 4880452.60)

1.13 2.00 3.00 4.00 5.00 6.00 7.00 7.24

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **7.24 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 2 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 7.51 [ug/m^3] at (271583.93, 4880452.60)

1.15 2.00 3.00 4.00 5.00 6.00 7.00 7.51

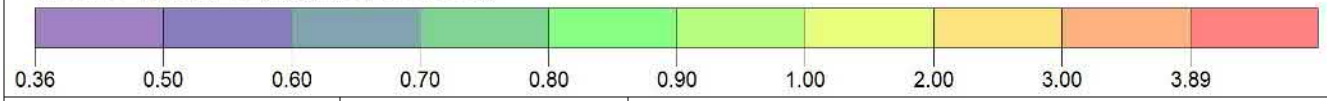
COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **7.51 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 2 - NO2

PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

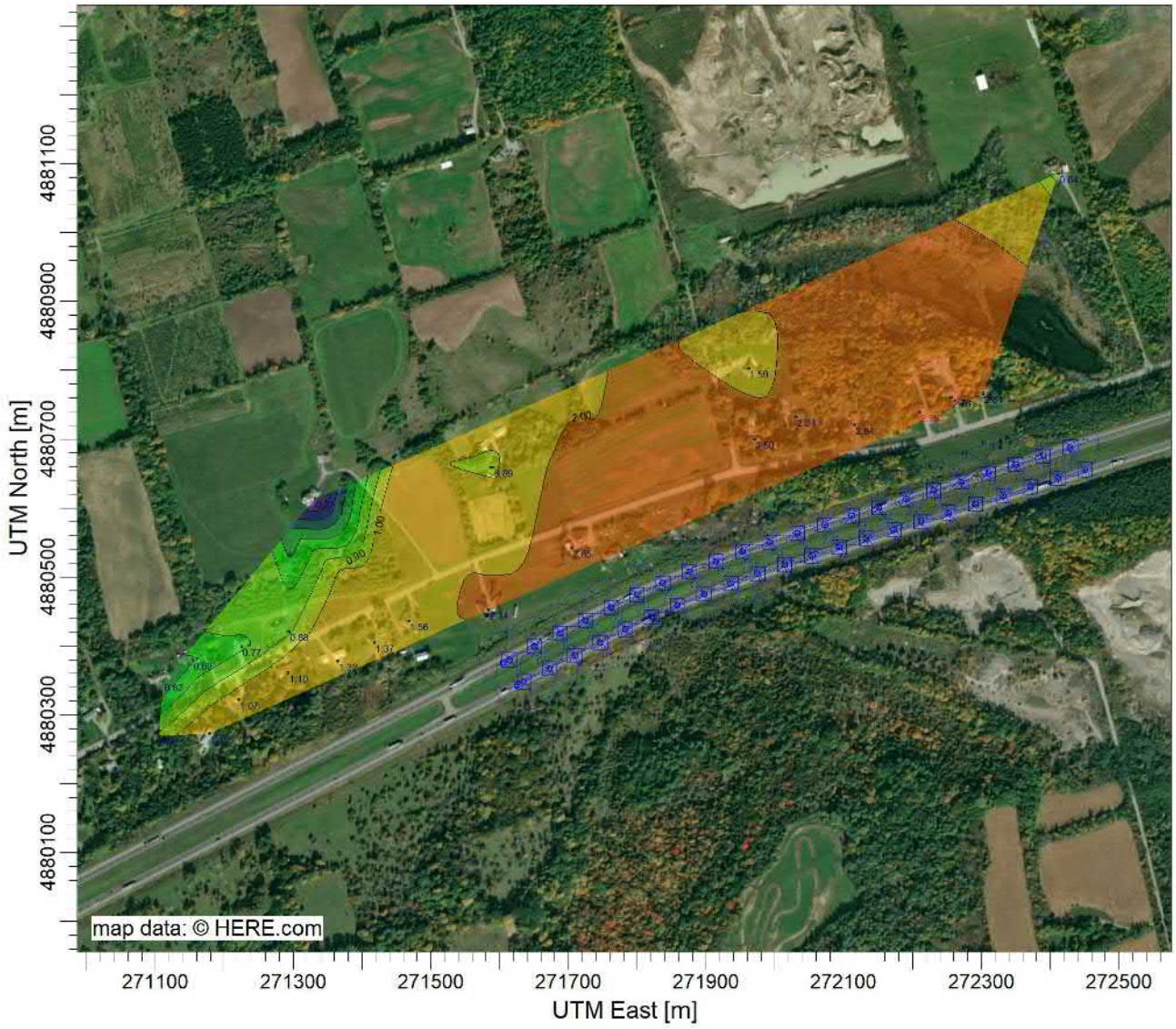
Max: 3.89 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **3.89 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

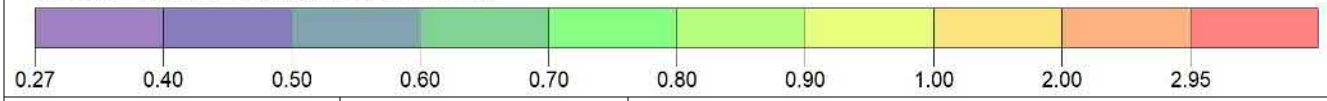
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 2 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 2.95 [ug/m^3] at (272210.55, 4880739.64)



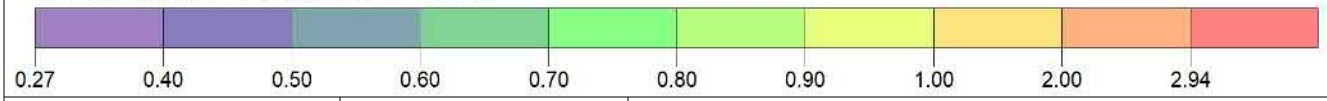
COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **2.95 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 2 - NO2

PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

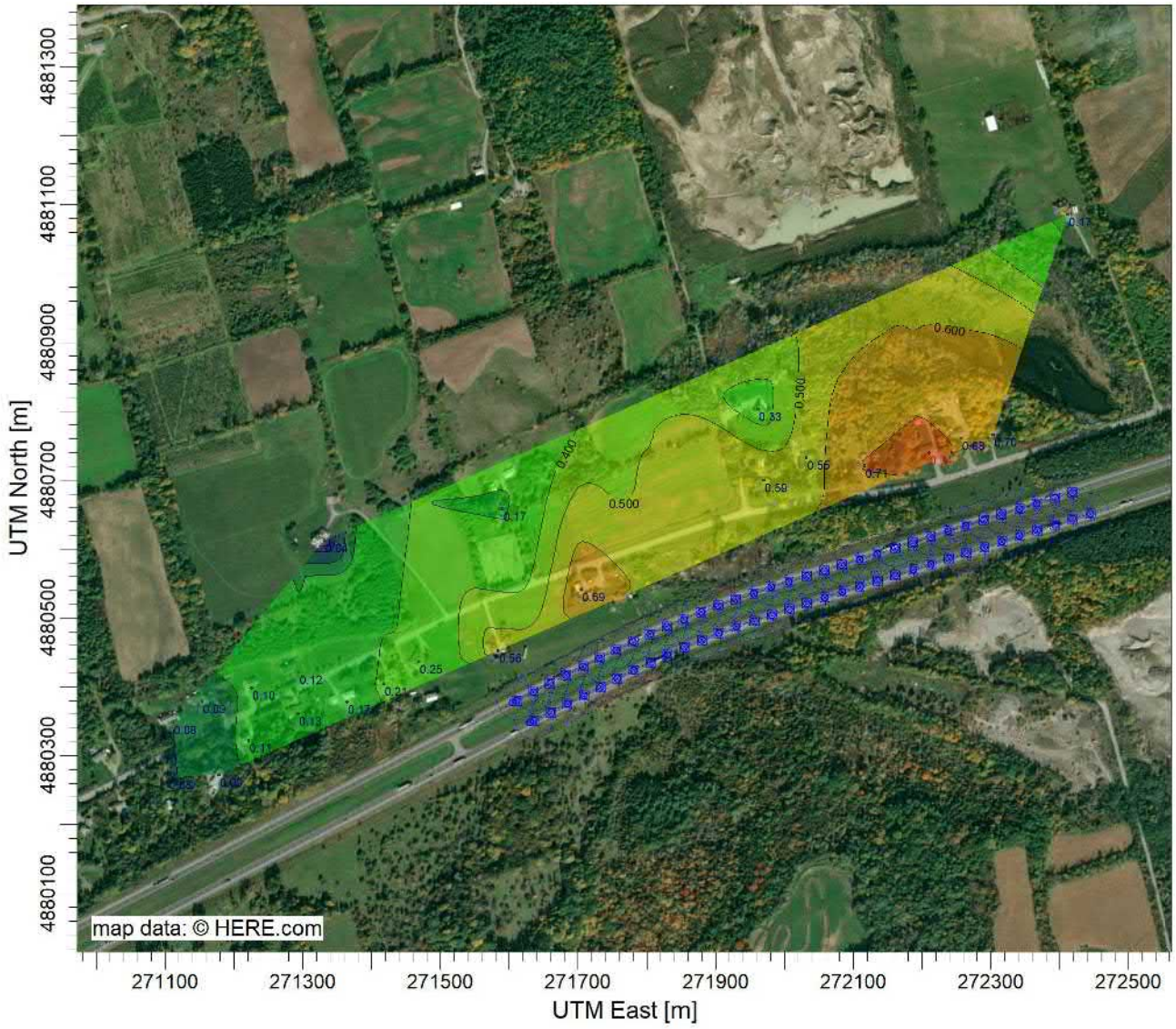
Max: 2.94 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **2.94 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

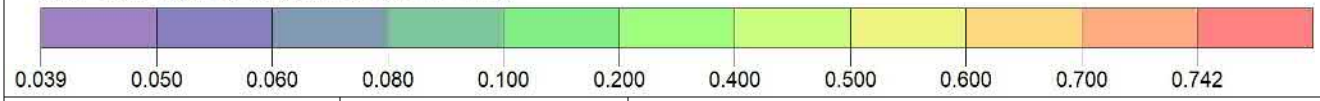
PROJECT TITLE:

Highway 401 Brighton 2022
Section 2 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

Max: 0.742 [ug/m^3] at (272210.55, 4880739.64)



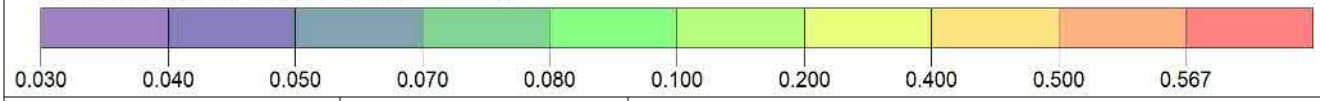
COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **0.742 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 2 - NO2

POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

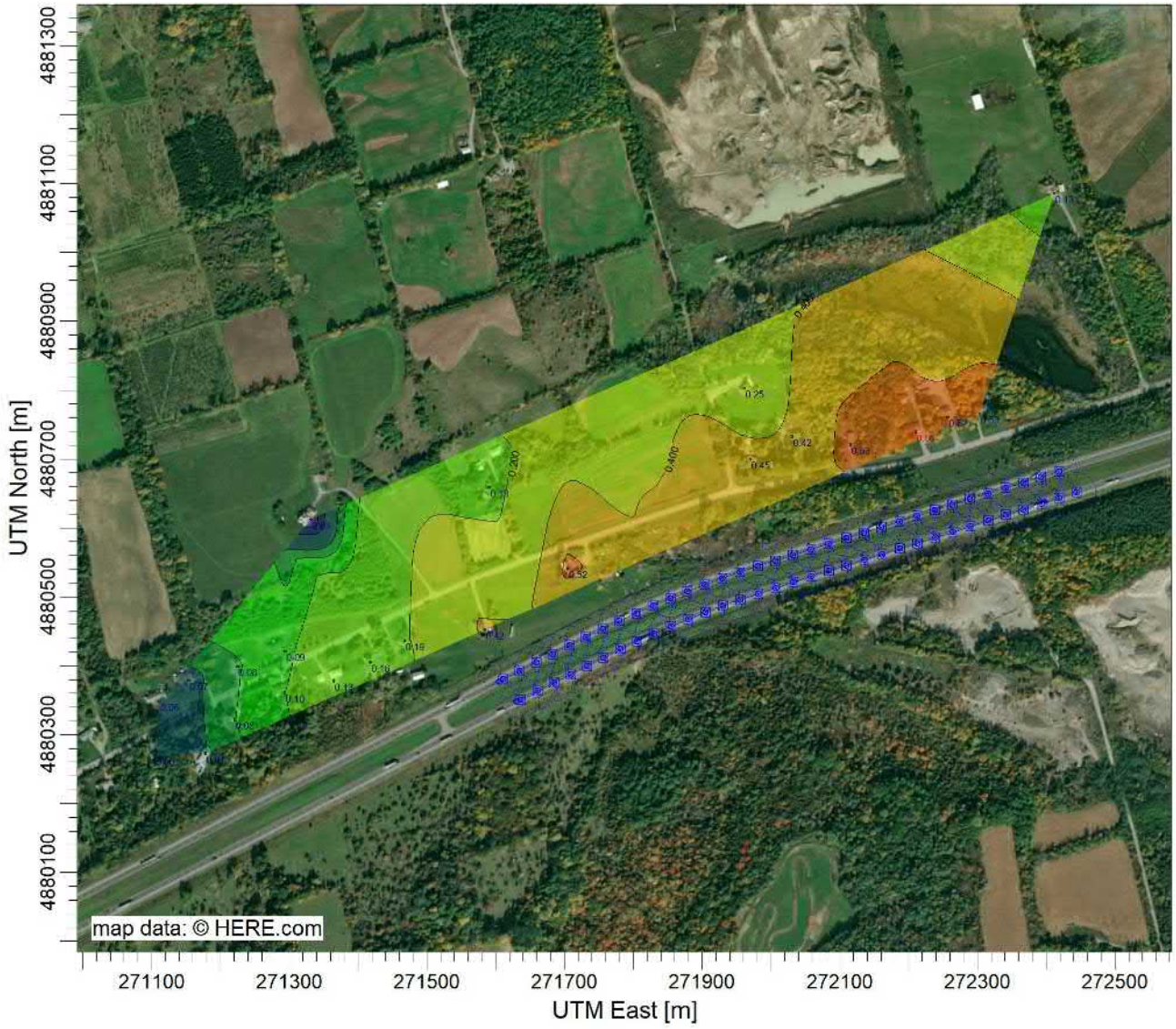
Max: 0.567 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **0.567 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

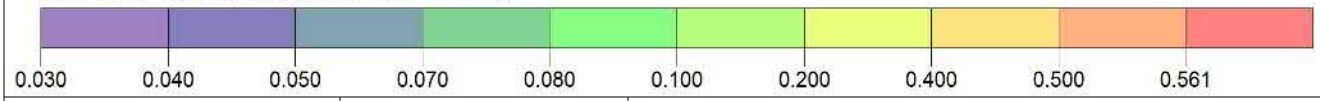
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 2 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

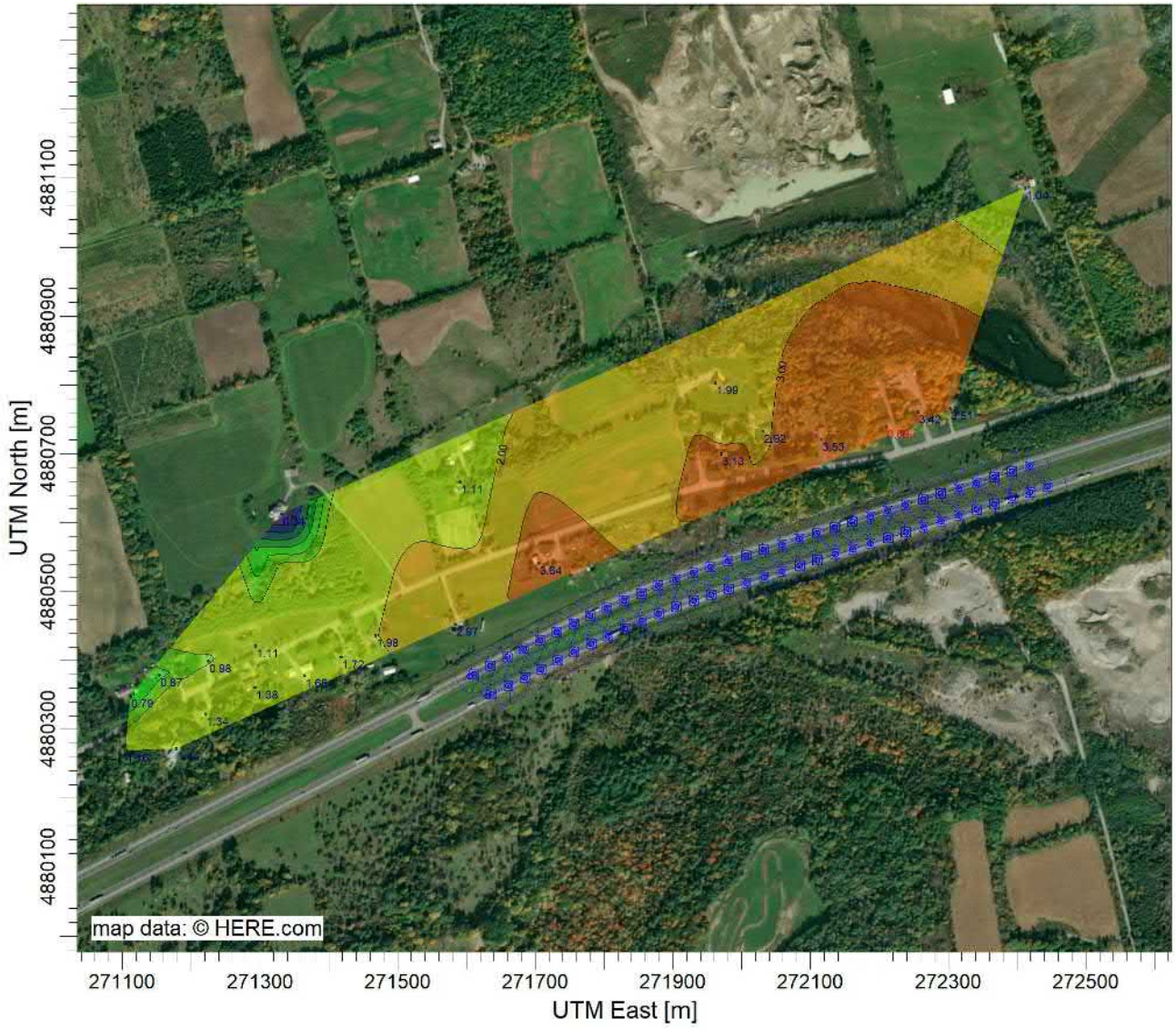
Max: 0.561 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **0.561 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

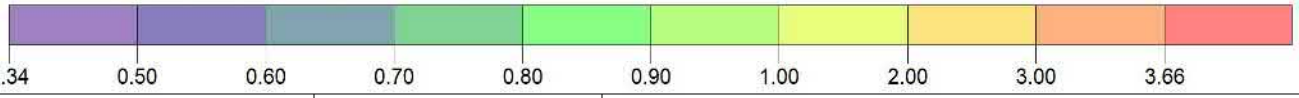
PROJECT TITLE:

Highway 401 Brighton 2022
Section 2 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 3.66 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS: PM2.5 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **3.66 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 2 - PM2.5

PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 4.04 [ug/m^3] at (272210.55, 4880739.64)

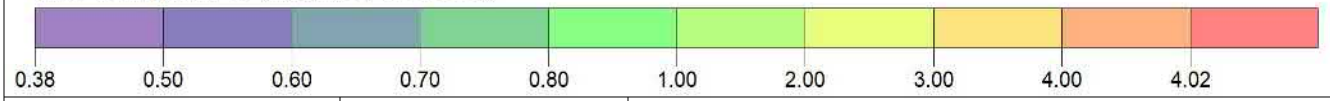
COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **4.04 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 2 - PM2.5

PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

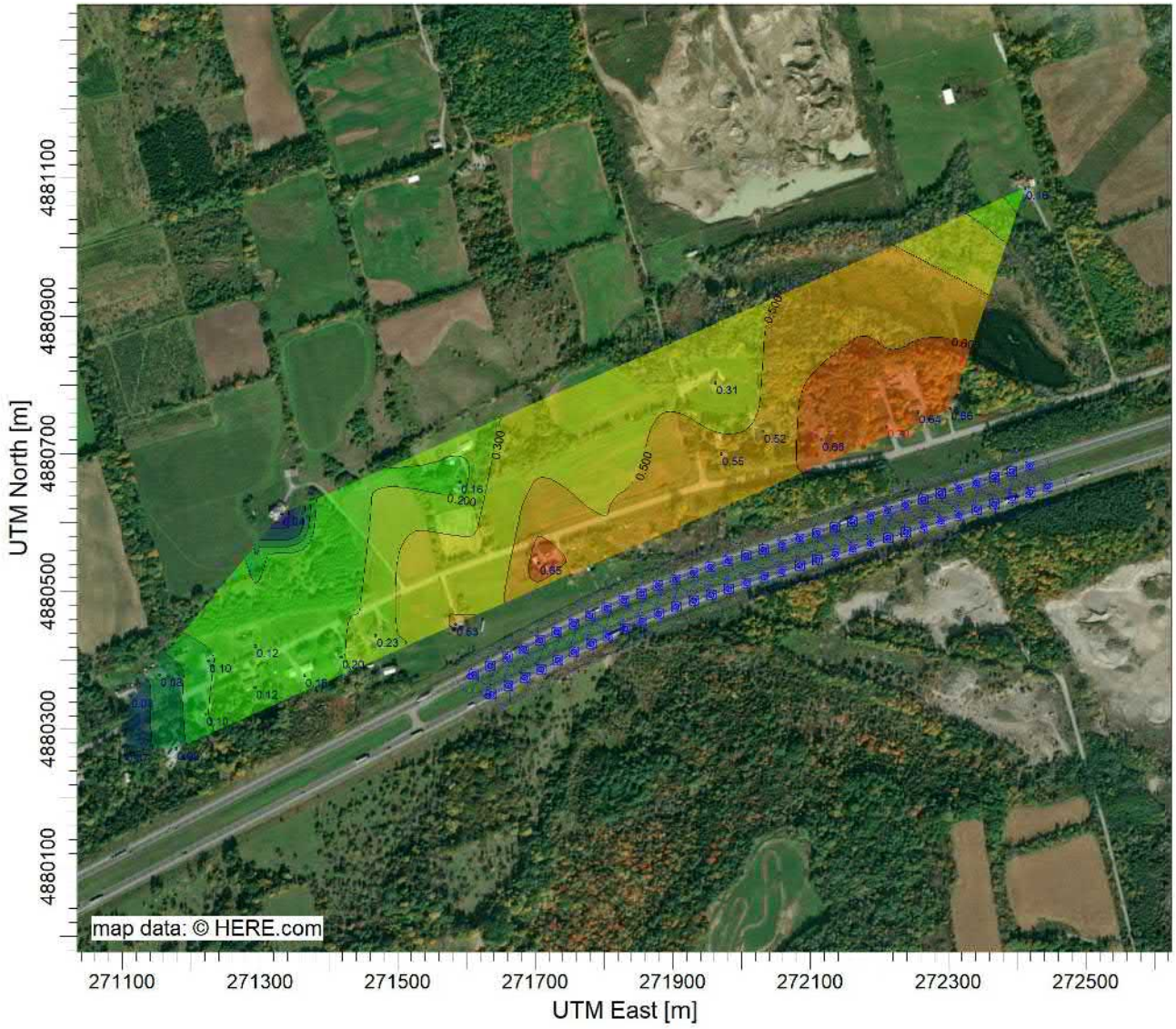
Max: 4.02 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **4.02 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

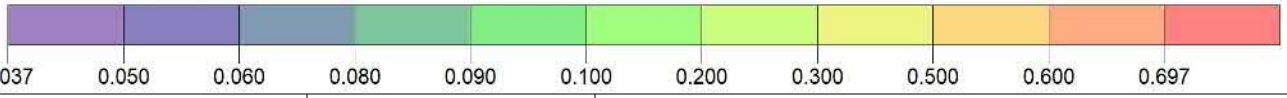
PROJECT TITLE:

Highway 401 Brighton 2022
Section 2 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

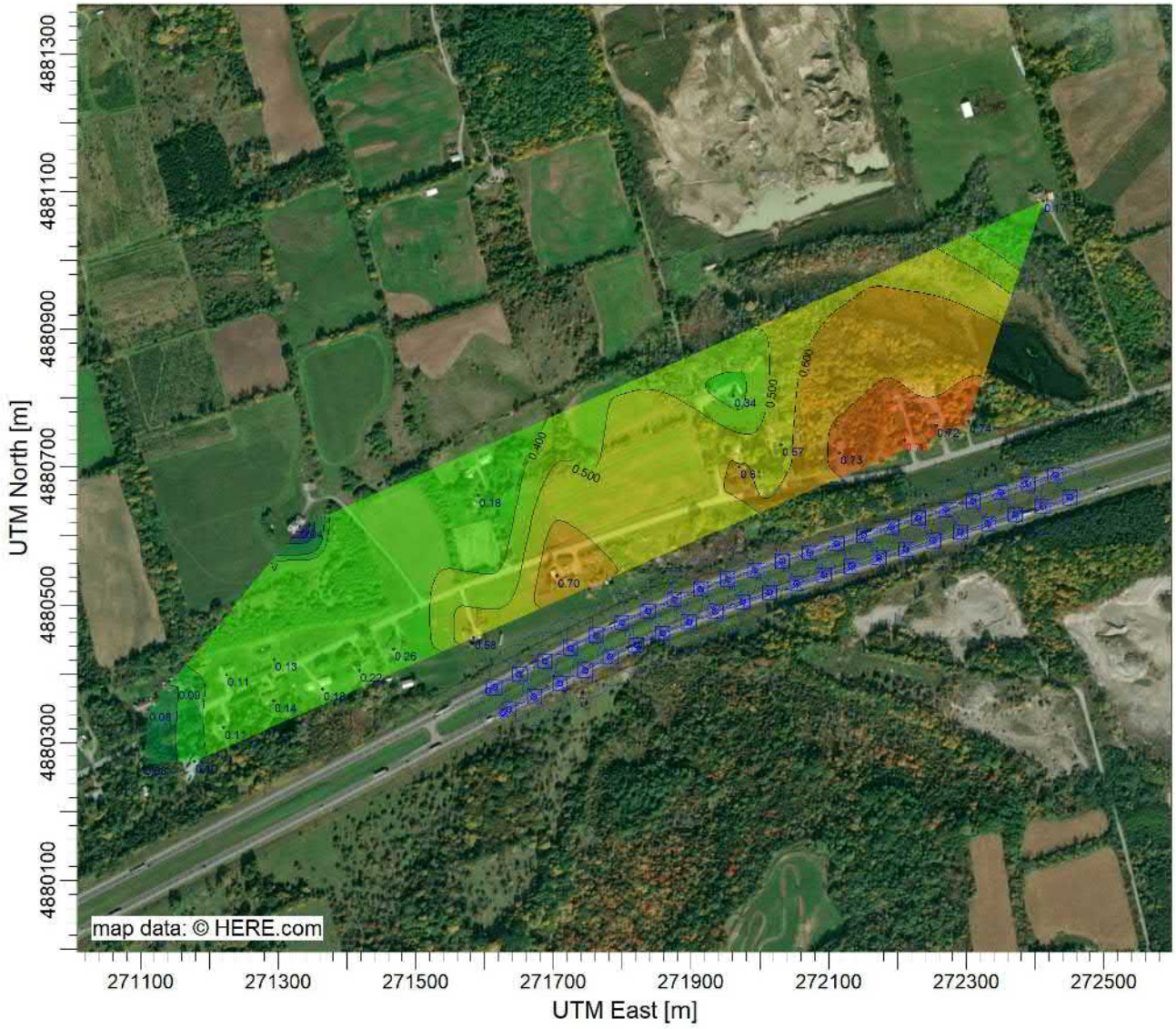
Max: 0.697 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 (0 — 0.3 km)	
	MAX: **0.697 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 2 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

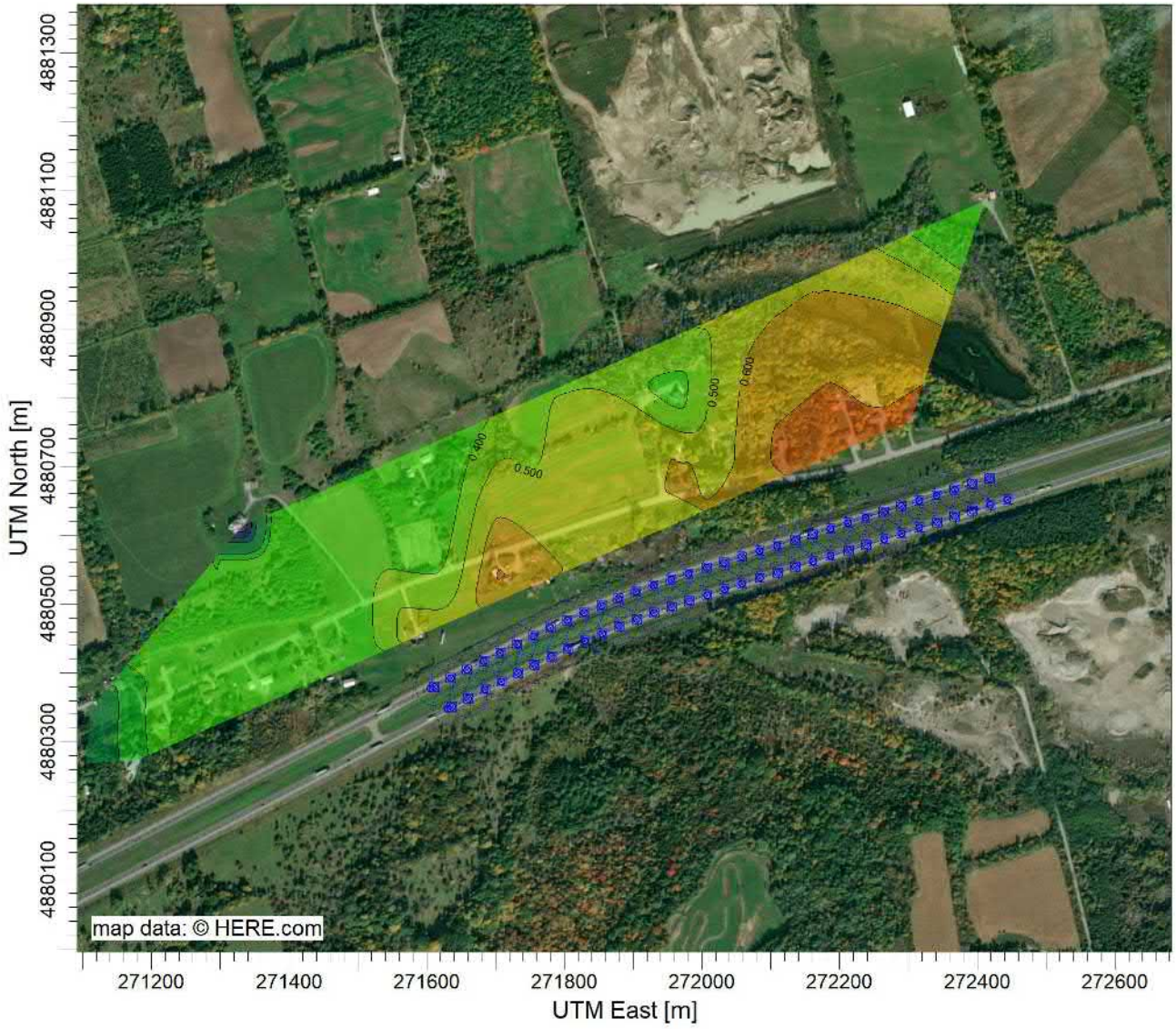
Max: 0.776 [ug/m^3] at (272210.55, 4880739.64)

0.040 0.050 0.060 0.070 0.090 0.100 0.400 0.500 0.600 0.700 0.776

COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **0.776 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

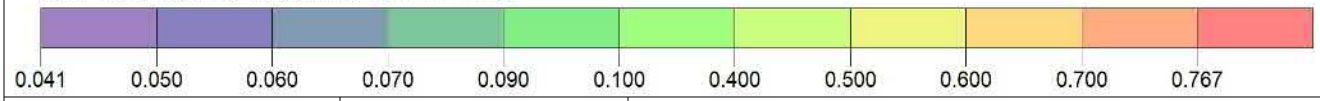
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 2 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

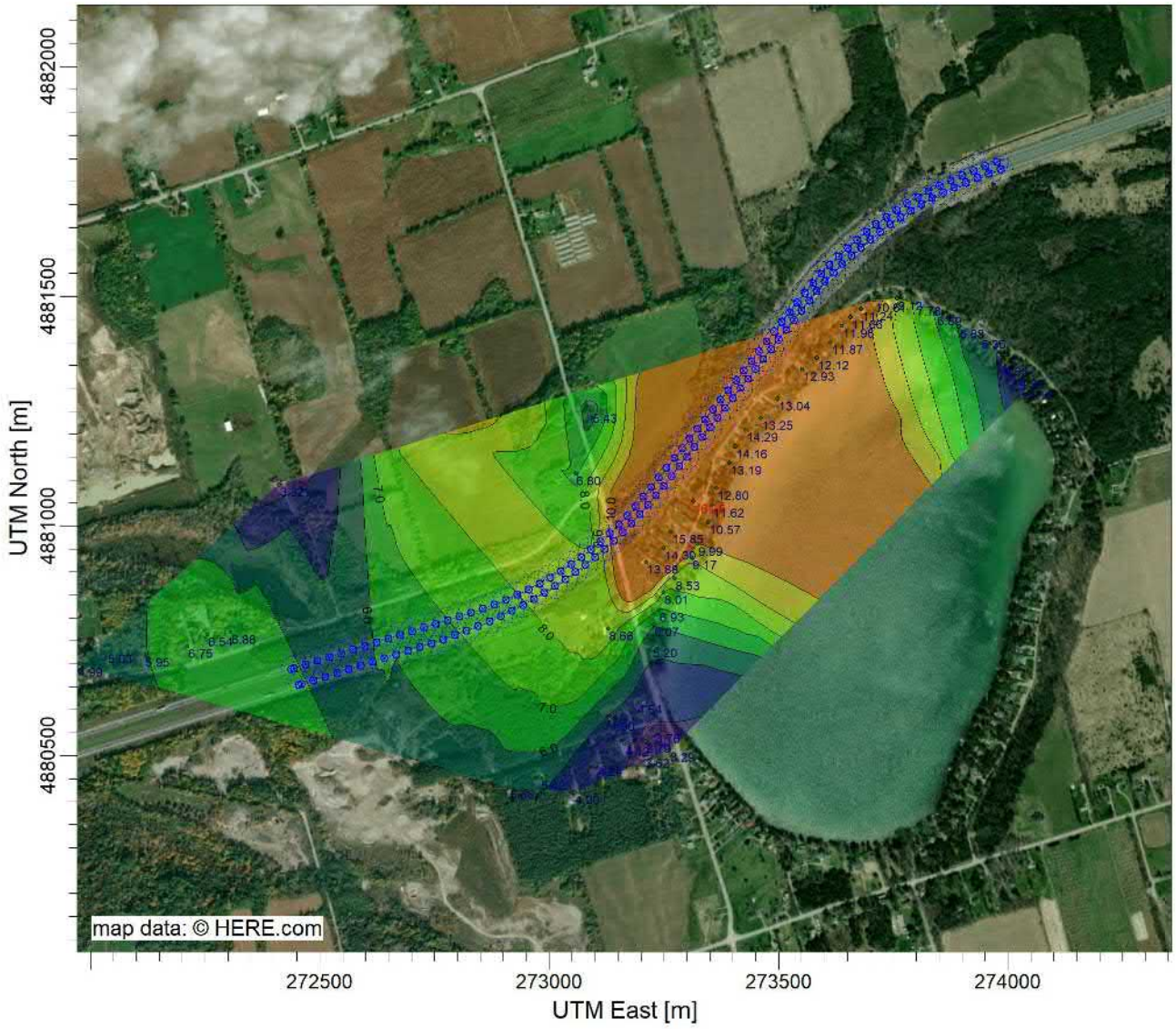
Max: 0.767 [ug/m^3] at (272210.55, 4880739.64)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **23**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **0.767 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 3 - NO2



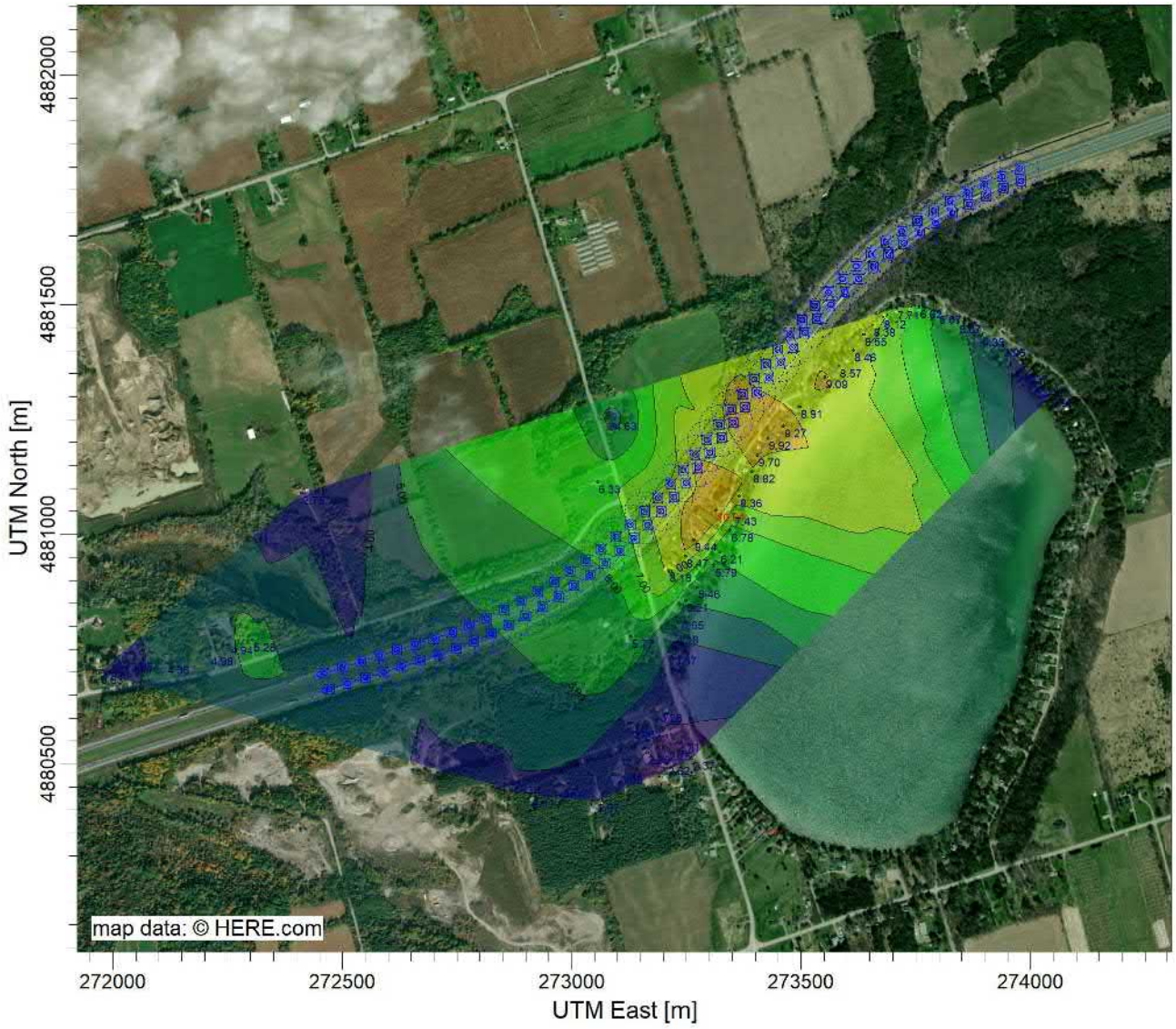
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 16.3 [ug/m^3] at (273314.00, 4881053.57)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 (0 — 0.5 km)	
	MAX: **16.3 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 3 - NO2



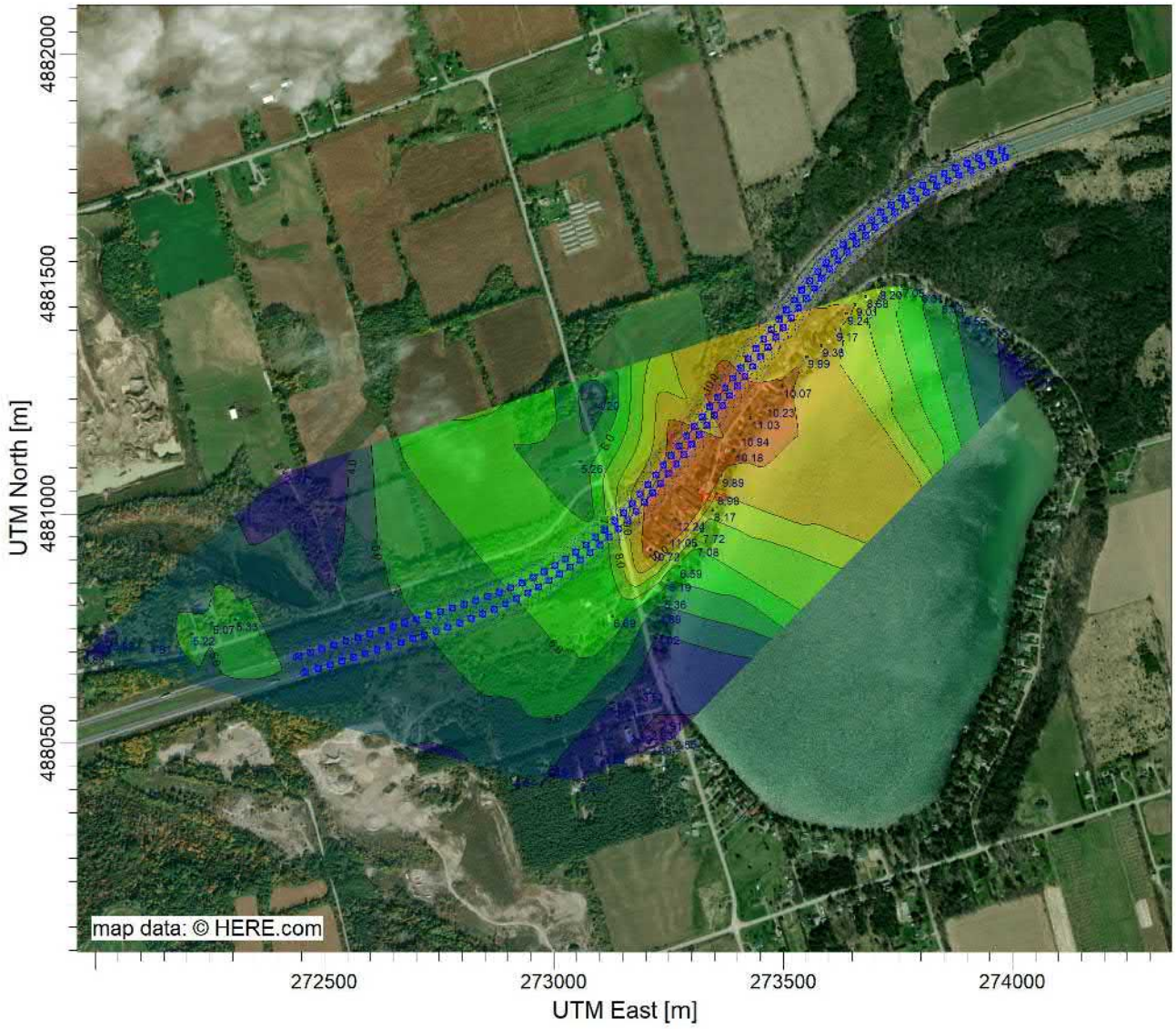
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 10.01 [ug/m^3] at (273314.00, 4881053.57)

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **10.01 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 3 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

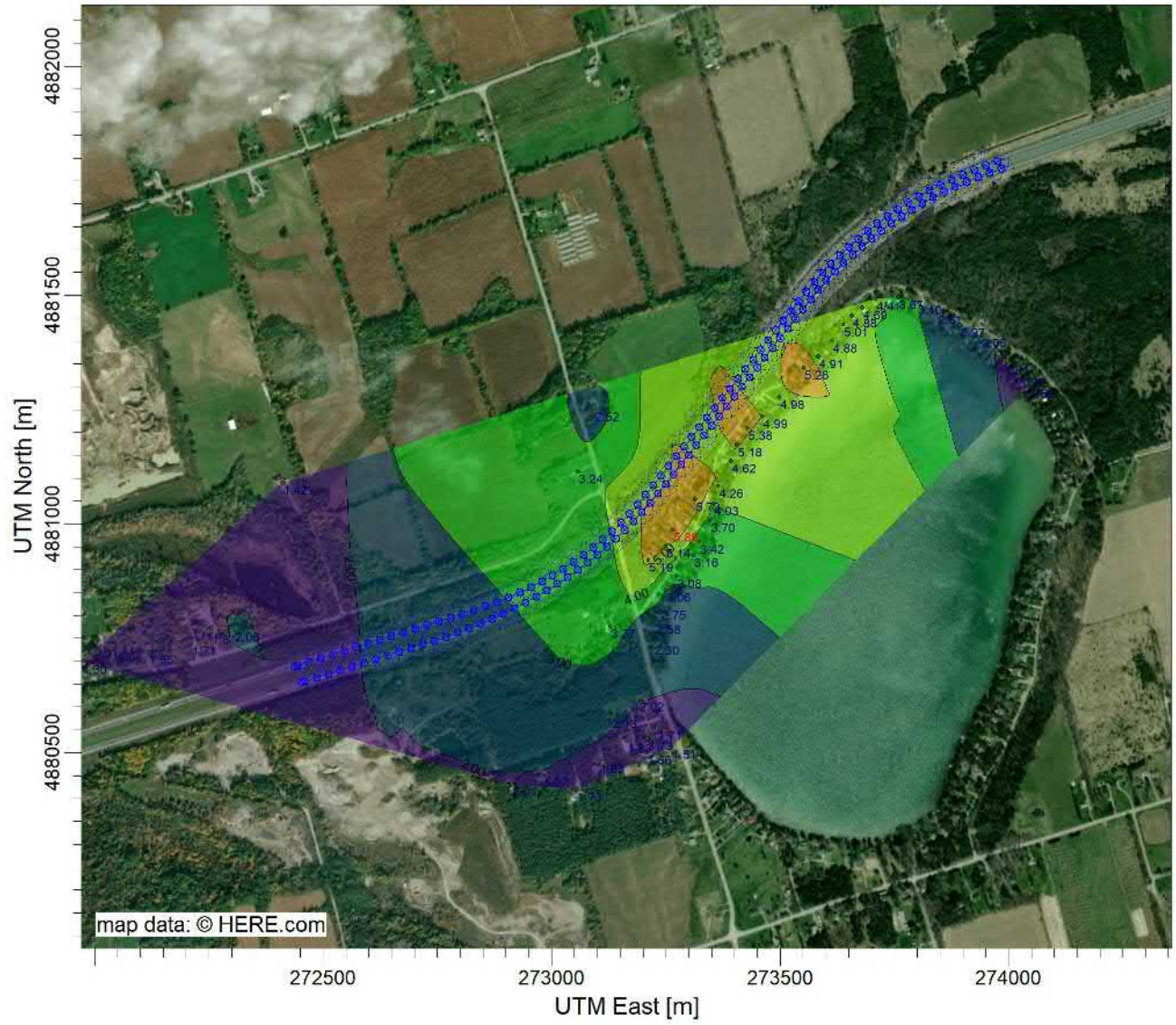
Max: 12.6 [ug/m^3] at (273314.00, 4881053.57)

2.5 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 12.6

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **12.6 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 3 - NO2



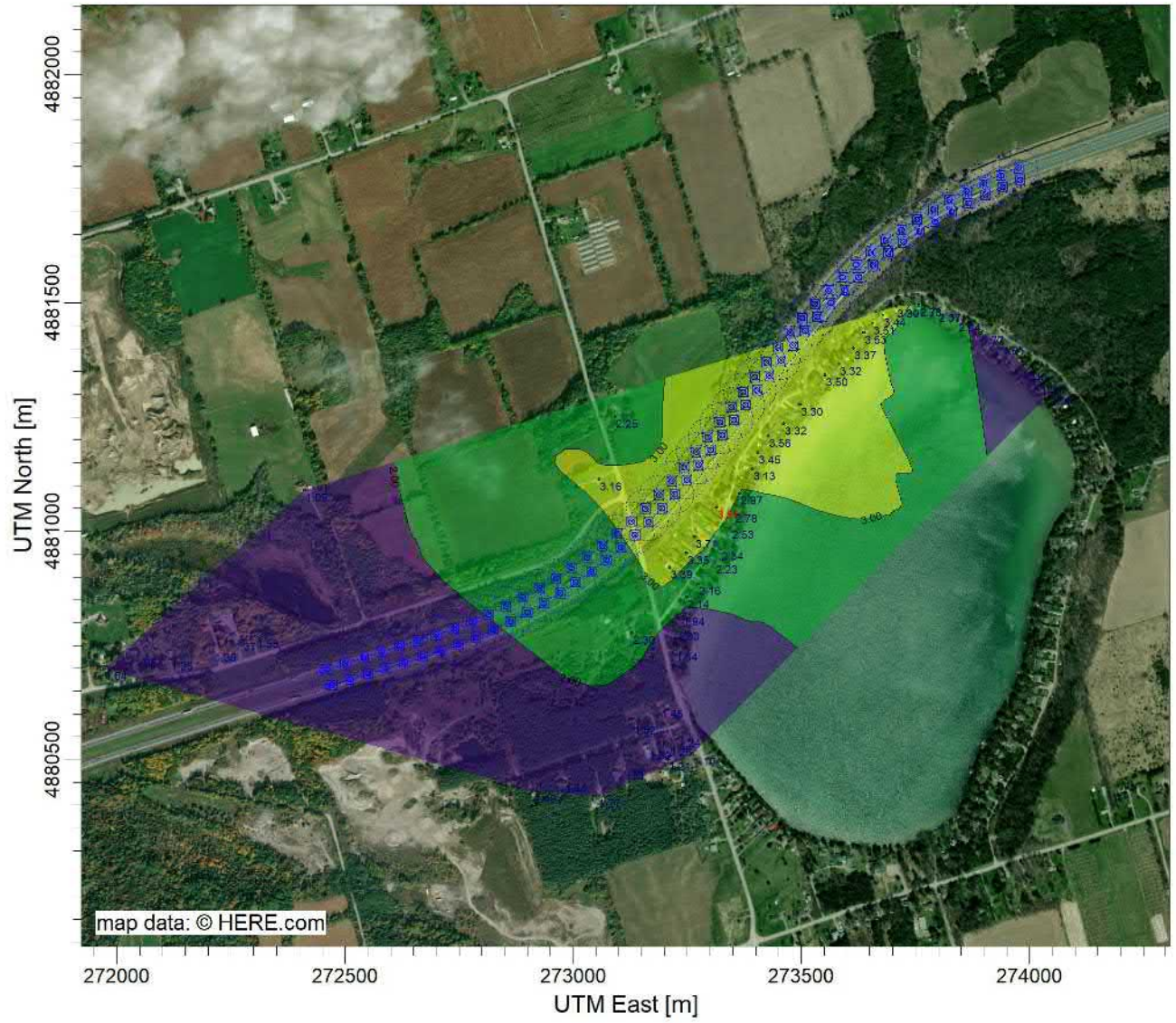
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.89 [ug/m^3] at (273265.44, 4880988.35)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **5.89 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 3 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

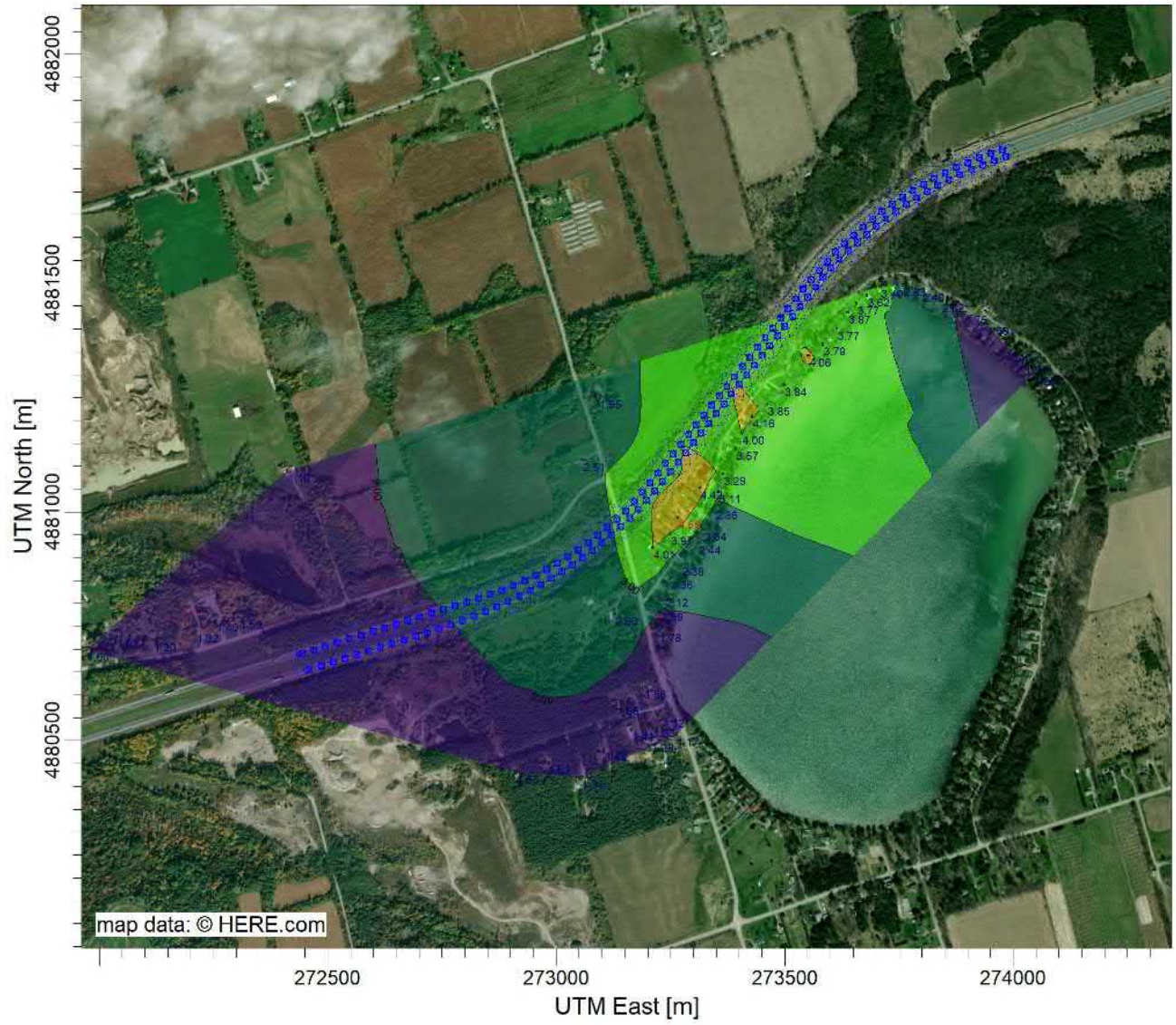
Max: 3.84 [ug/m^3] at (273314.00, 4881053.57)

1.04 2.00 3.00 3.84

COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **3.84 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 3 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

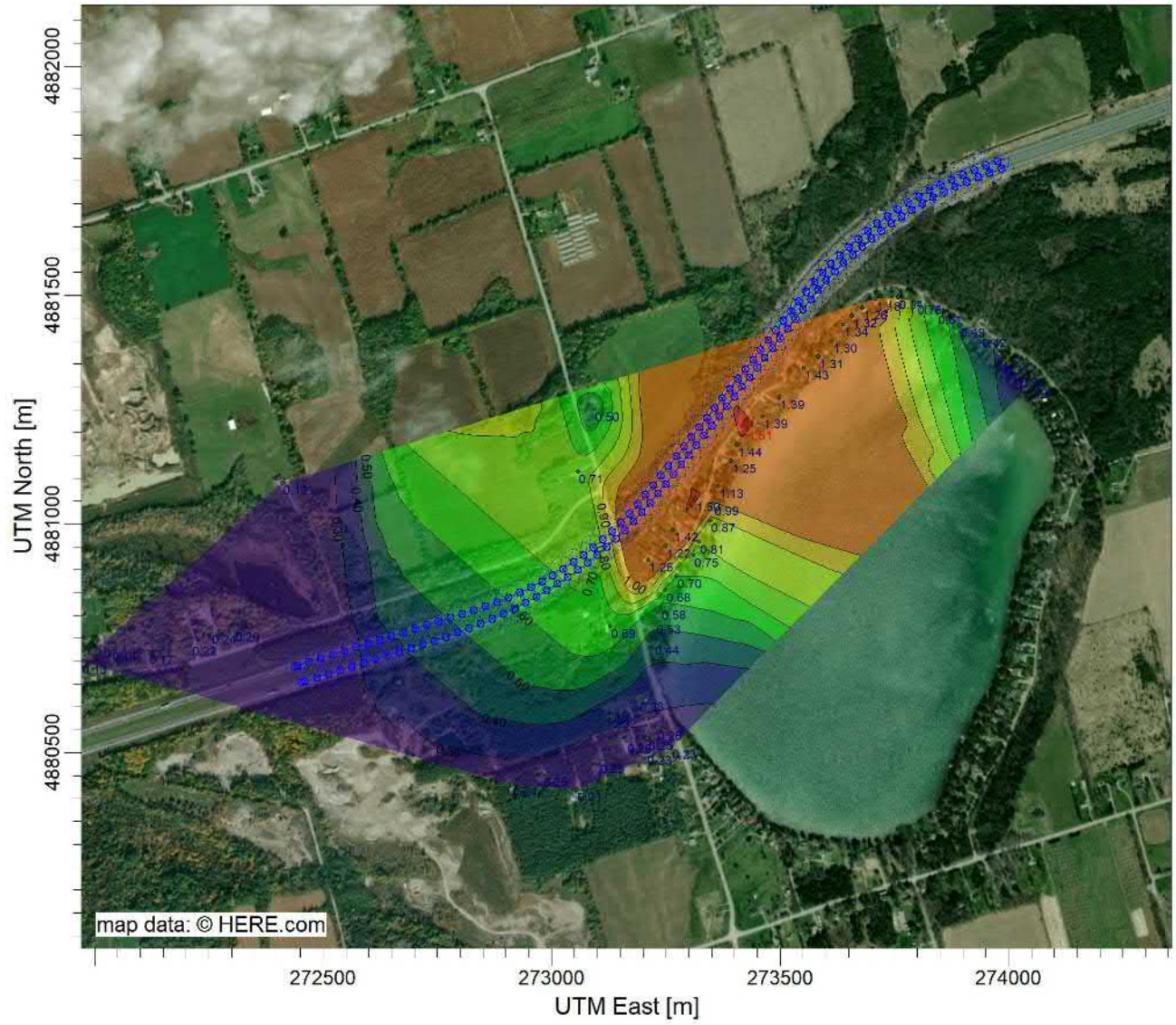
Max: 4.55 [ug/m^3] at (273265.44, 4880988.35)

1.00 2.00 3.00 4.00 4.55

COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **4.55 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 3 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

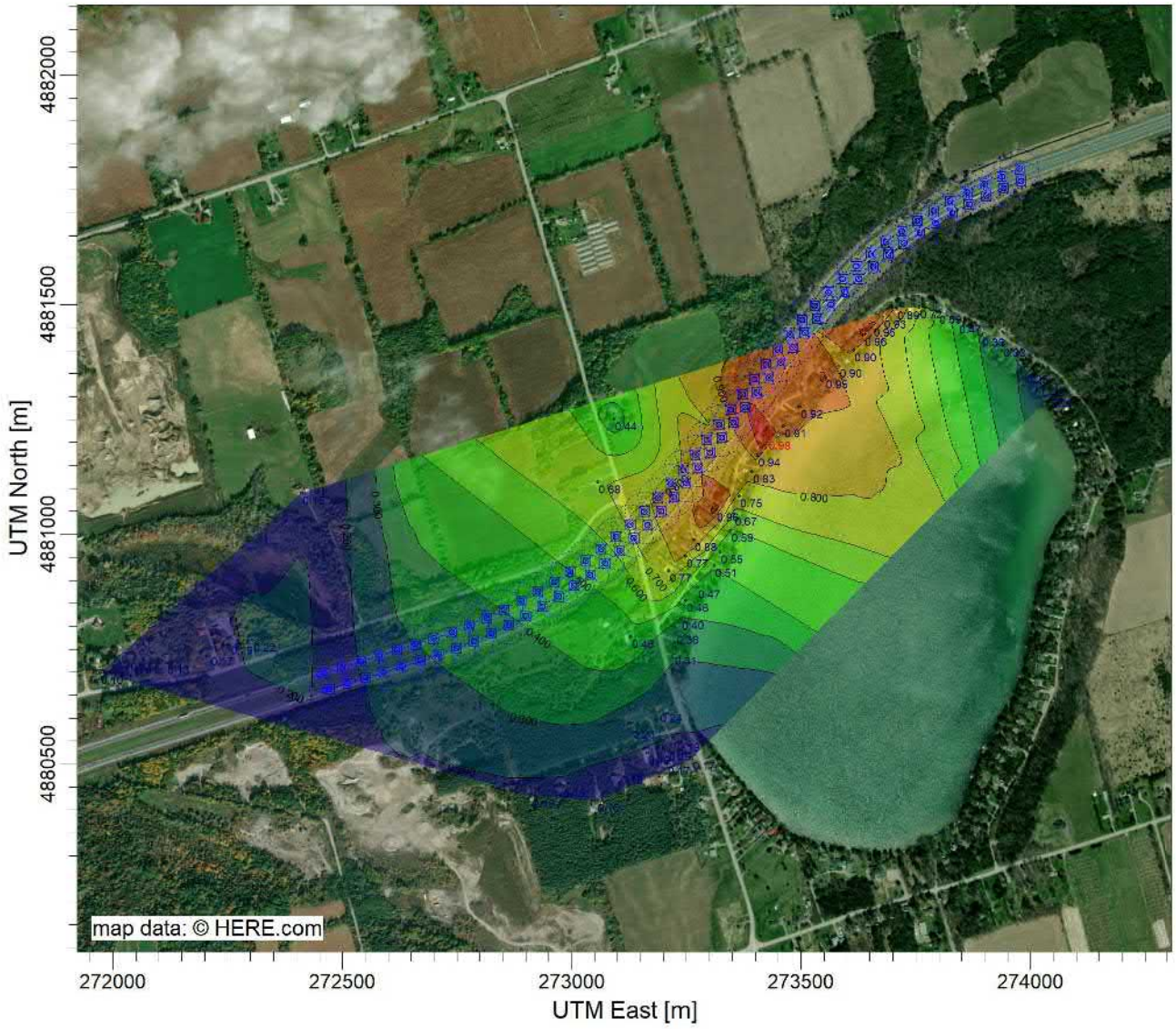
Max: 1.51 [ug/m^3] at (273427.85, 4881209.76)

0.13 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.46

COMMENTS: NO2 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **1.51 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

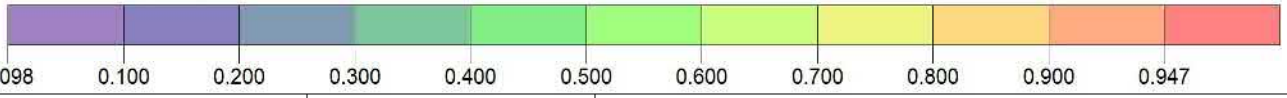
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 3 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

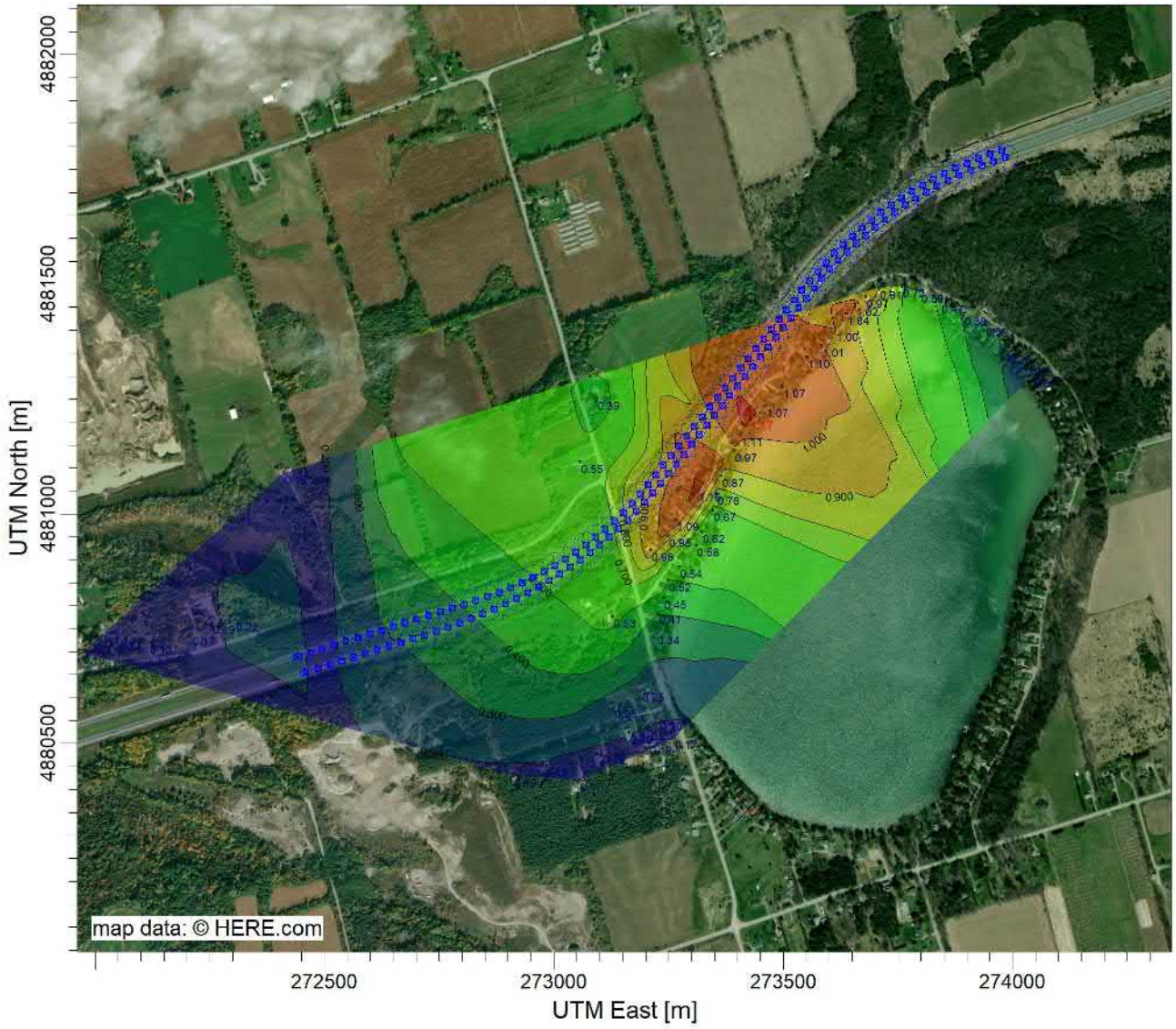
Max: 0.981 [ug/m^3] at (273427.85, 4881209.76)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 (0 — 0.5 km)	
	MAX: **0.981 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

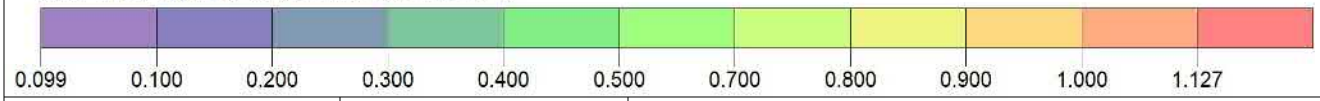
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 3 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

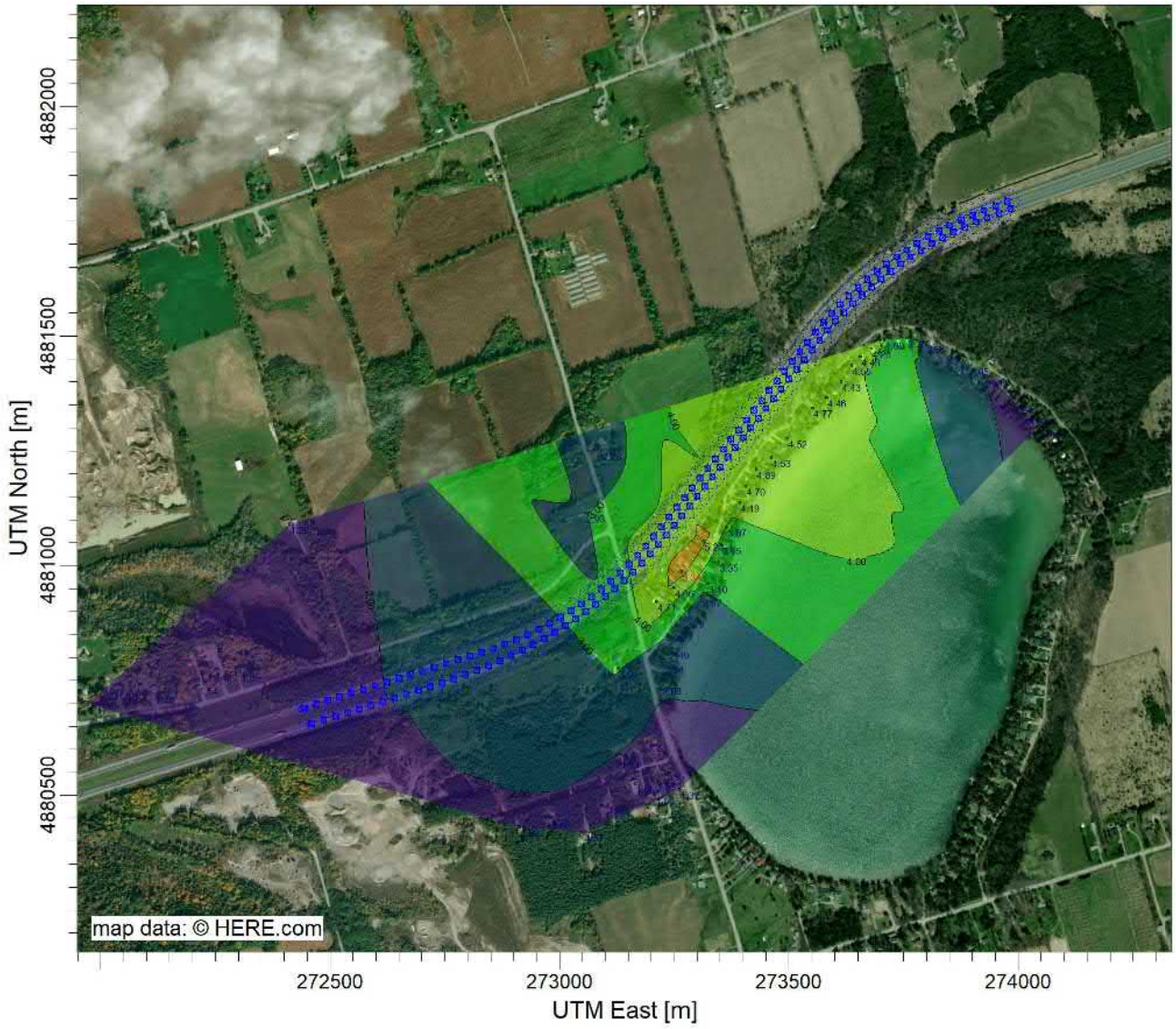
Max: 1.167 [ug/m^3] at (273427.85, 4881209.76)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **1.167 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 3 - PM2.5



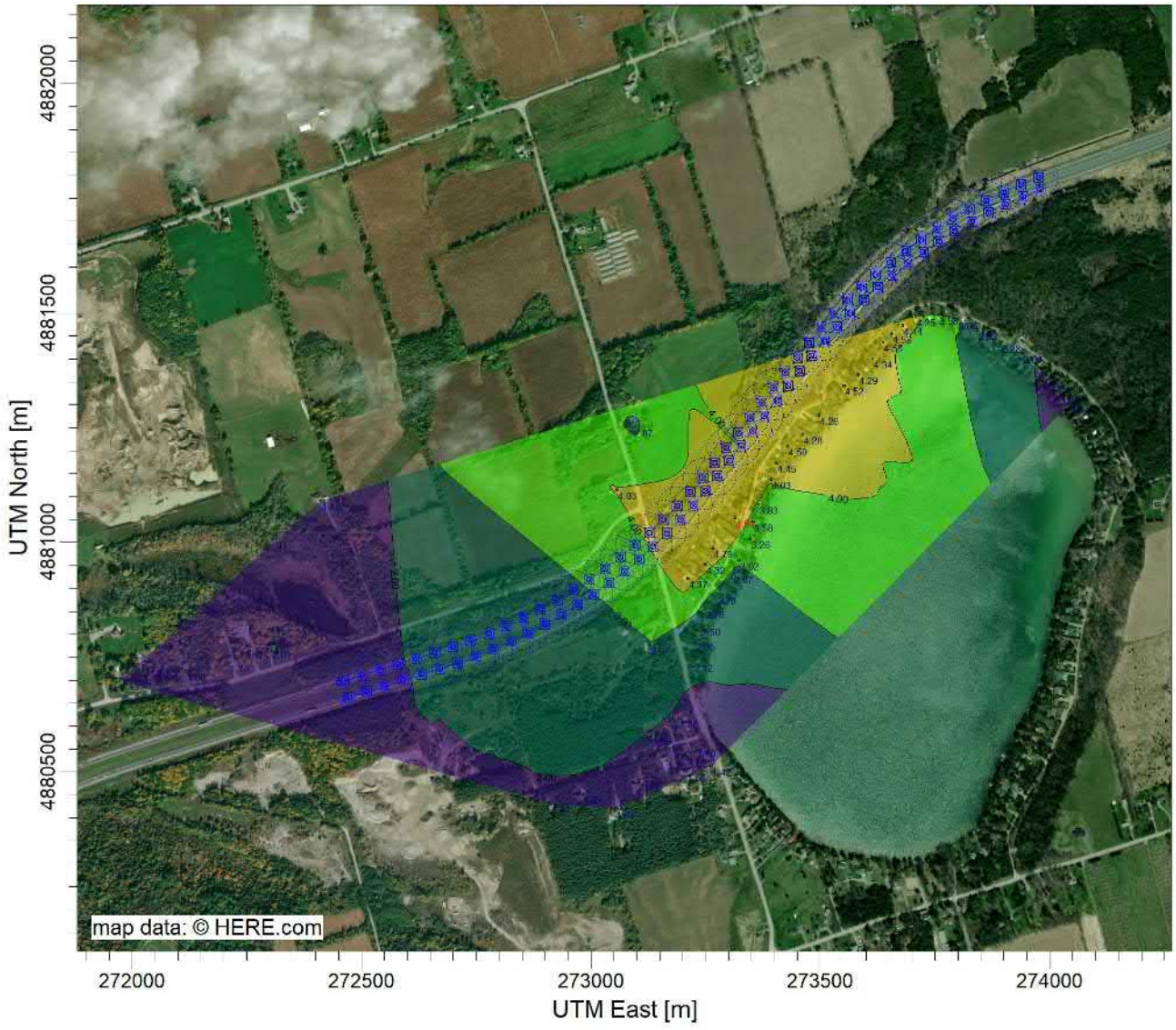
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.34 [ug/m^3] at (273265.44, 4880988.35)

COMMENTS: PM2.5 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **5.34 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

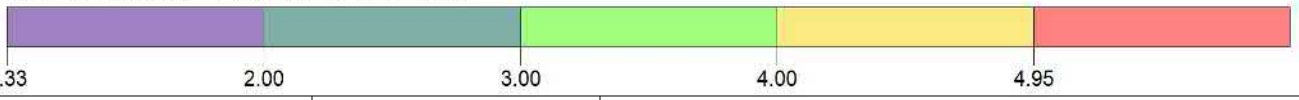
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 3 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

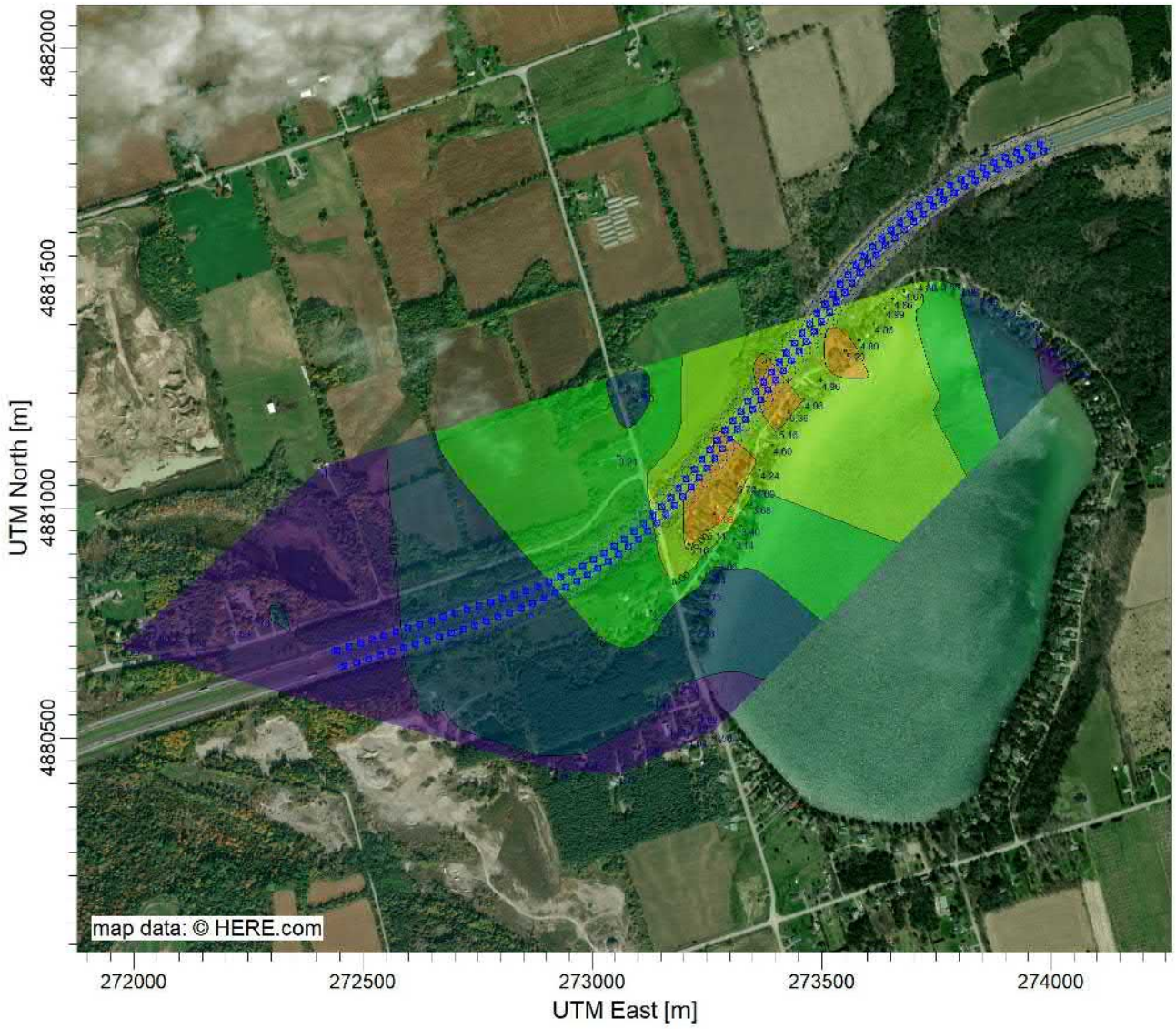
Max: 4.95 [ug/m^3] at (273314.00, 4881053.57)



COMMENTS: PM2.5 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **4.95 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 3 - PM2.5



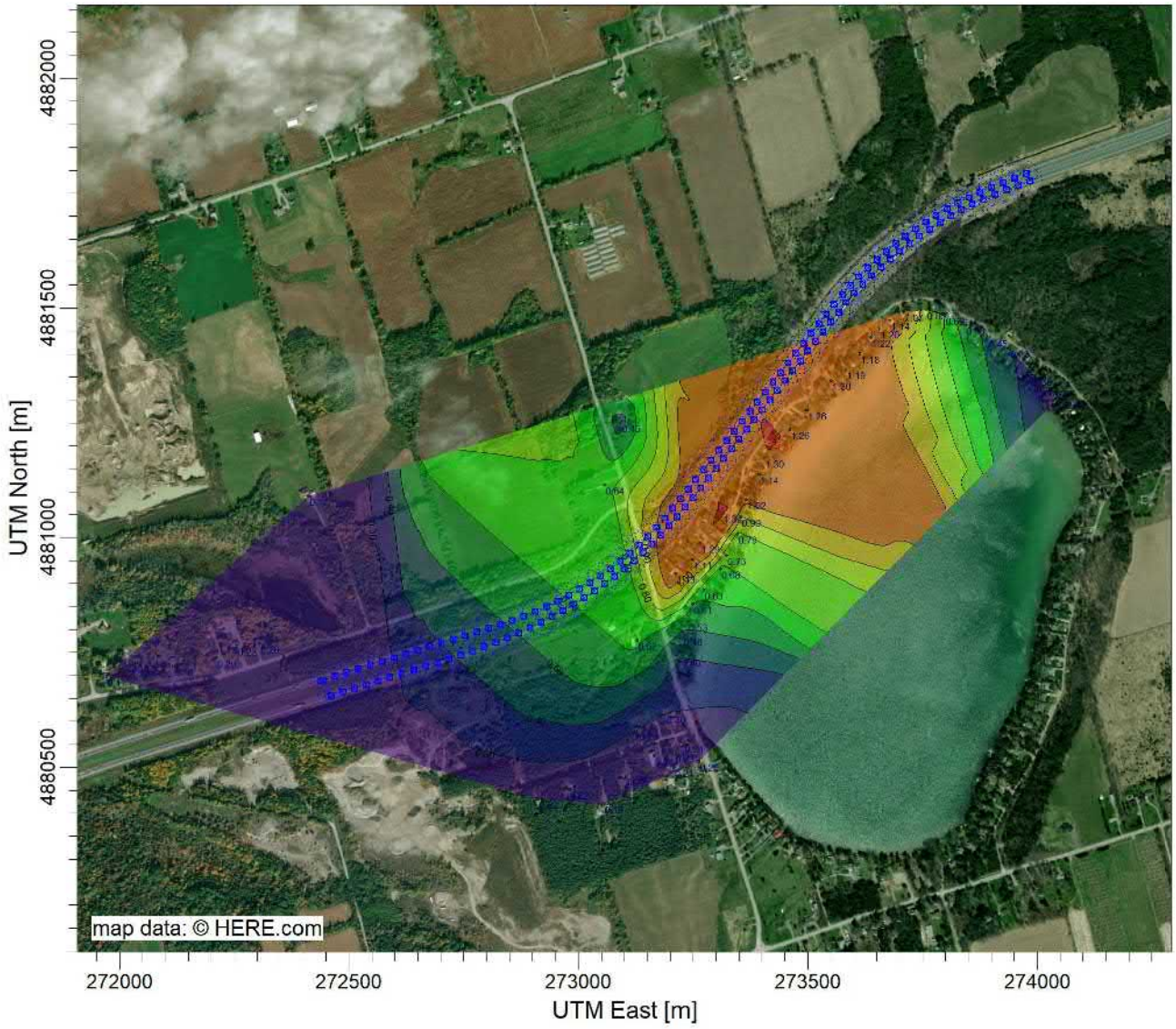
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.86 [ug/m^3] at (273265.44, 4880988.35)

COMMENTS: PM2.5 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **5.86 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

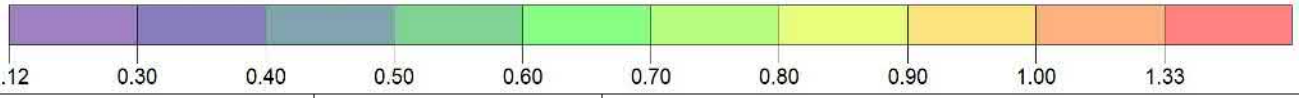
PROJECT TITLE:

Highway 401 Brighton 2022
Section 3 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

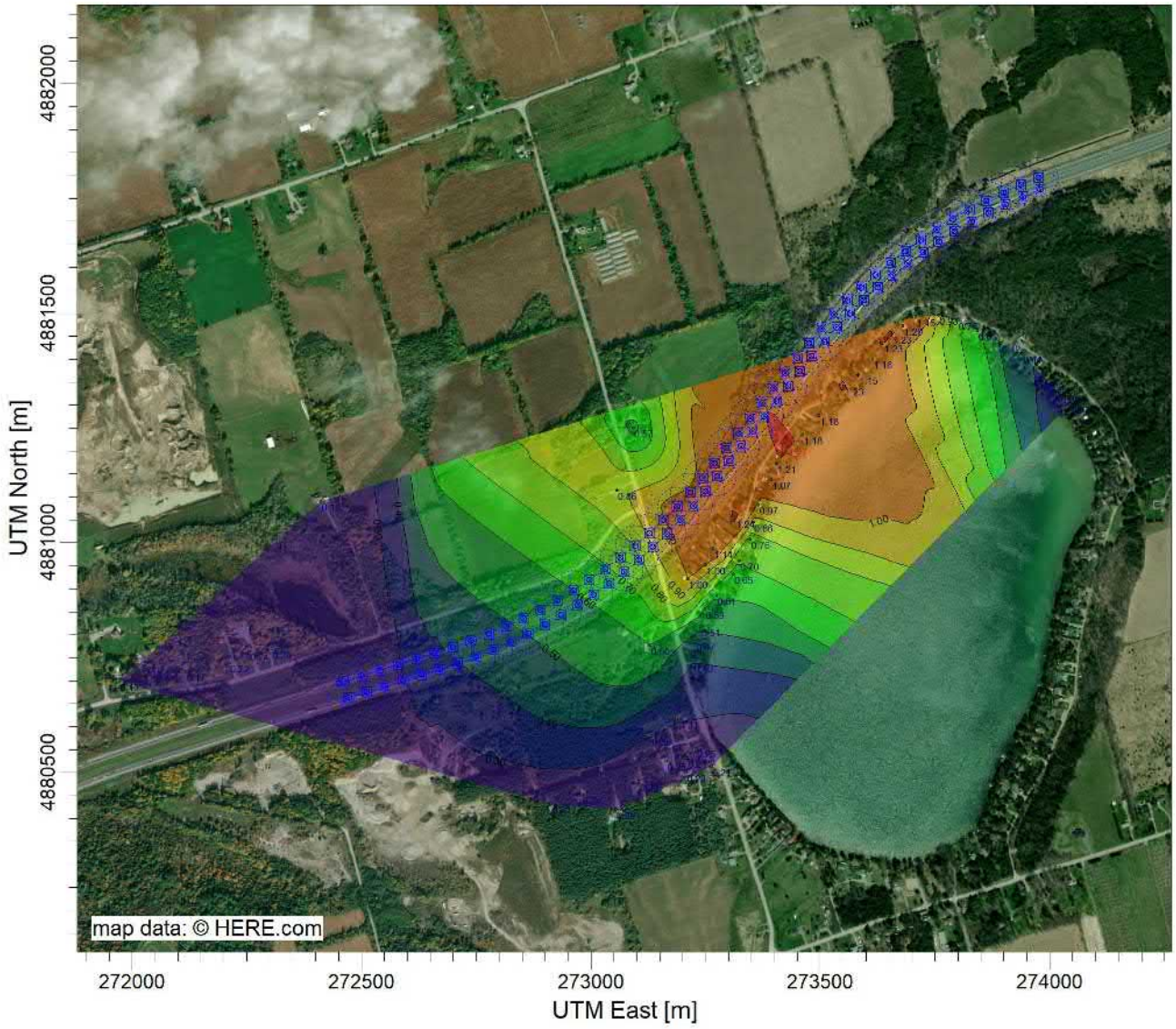
Max: 1.37 [ug/m^3] at (273427.85, 4881209.76)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **1.37 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

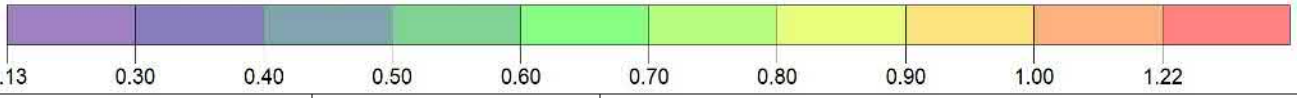
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 3 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

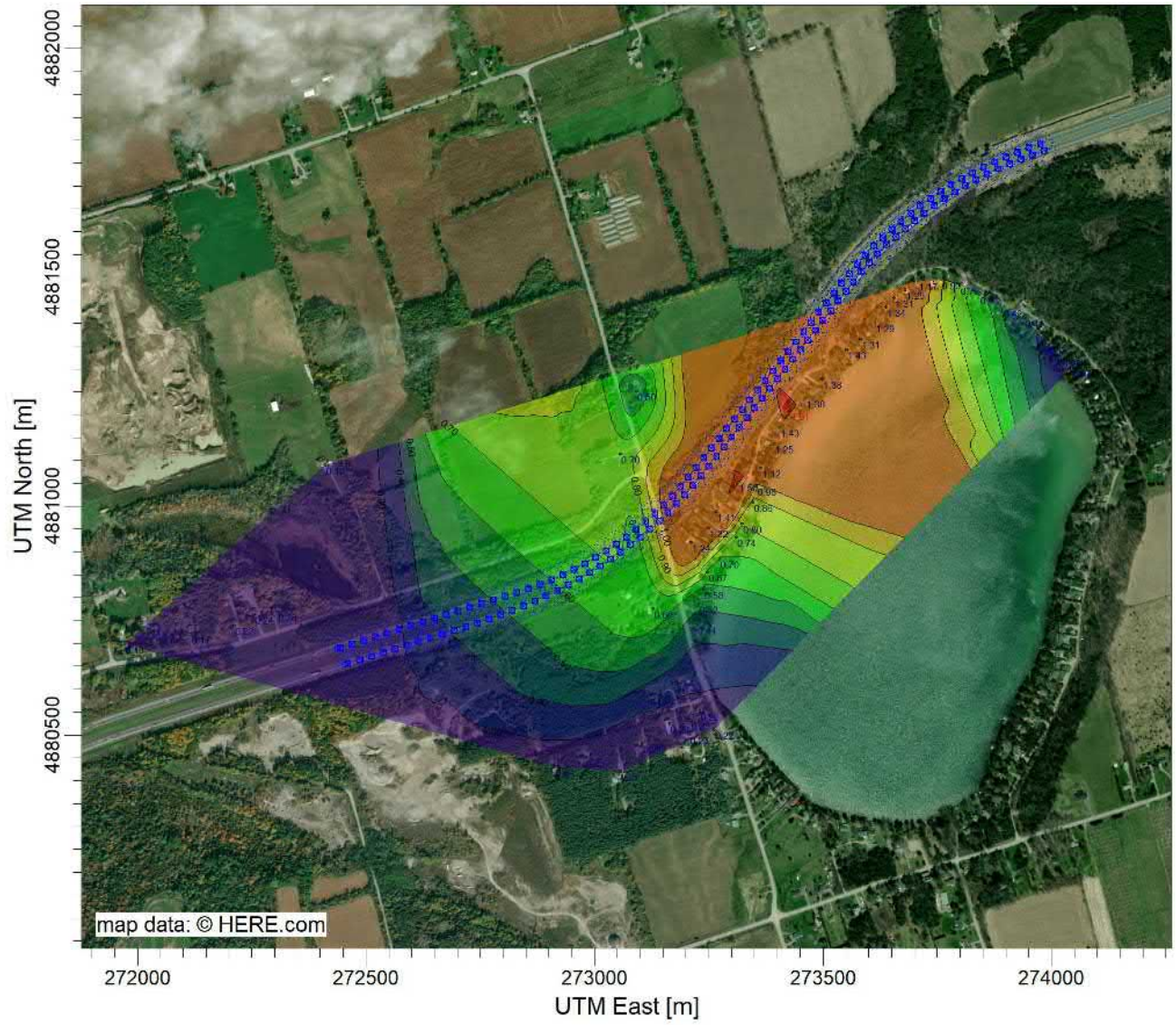
Max: 1.27 [ug/m^3] at (273427.85, 4881209.76)



COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **1.27 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

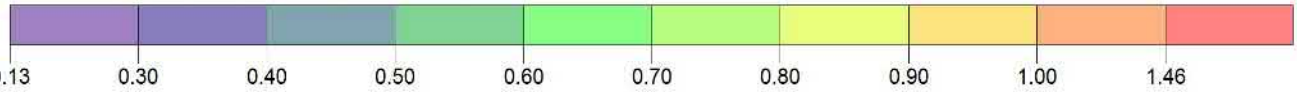
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 3 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

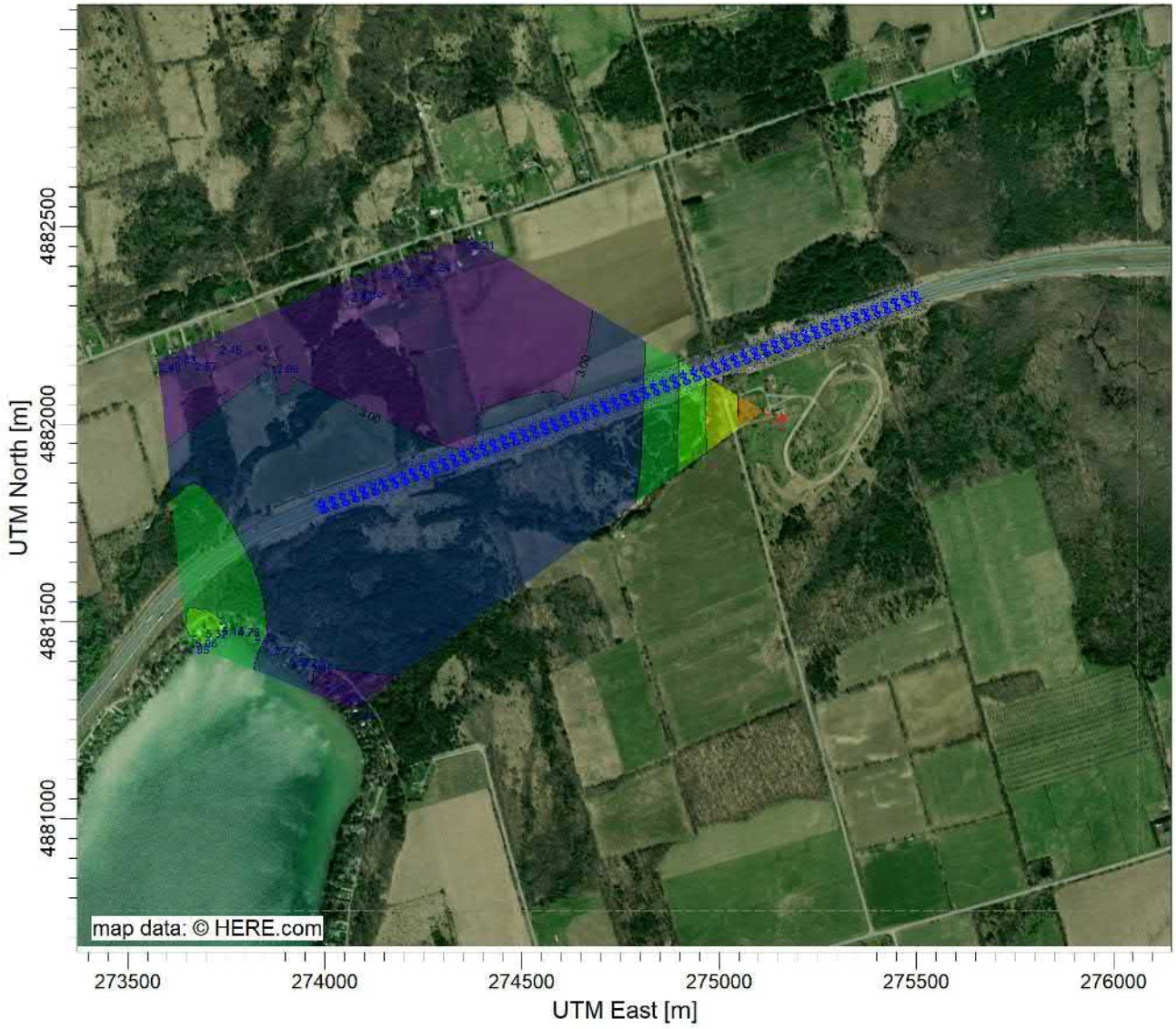
Max: 1.51 [ug/m^3] at (273427.85, 4881209.76)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **55**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **1.51 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 4 - NO2



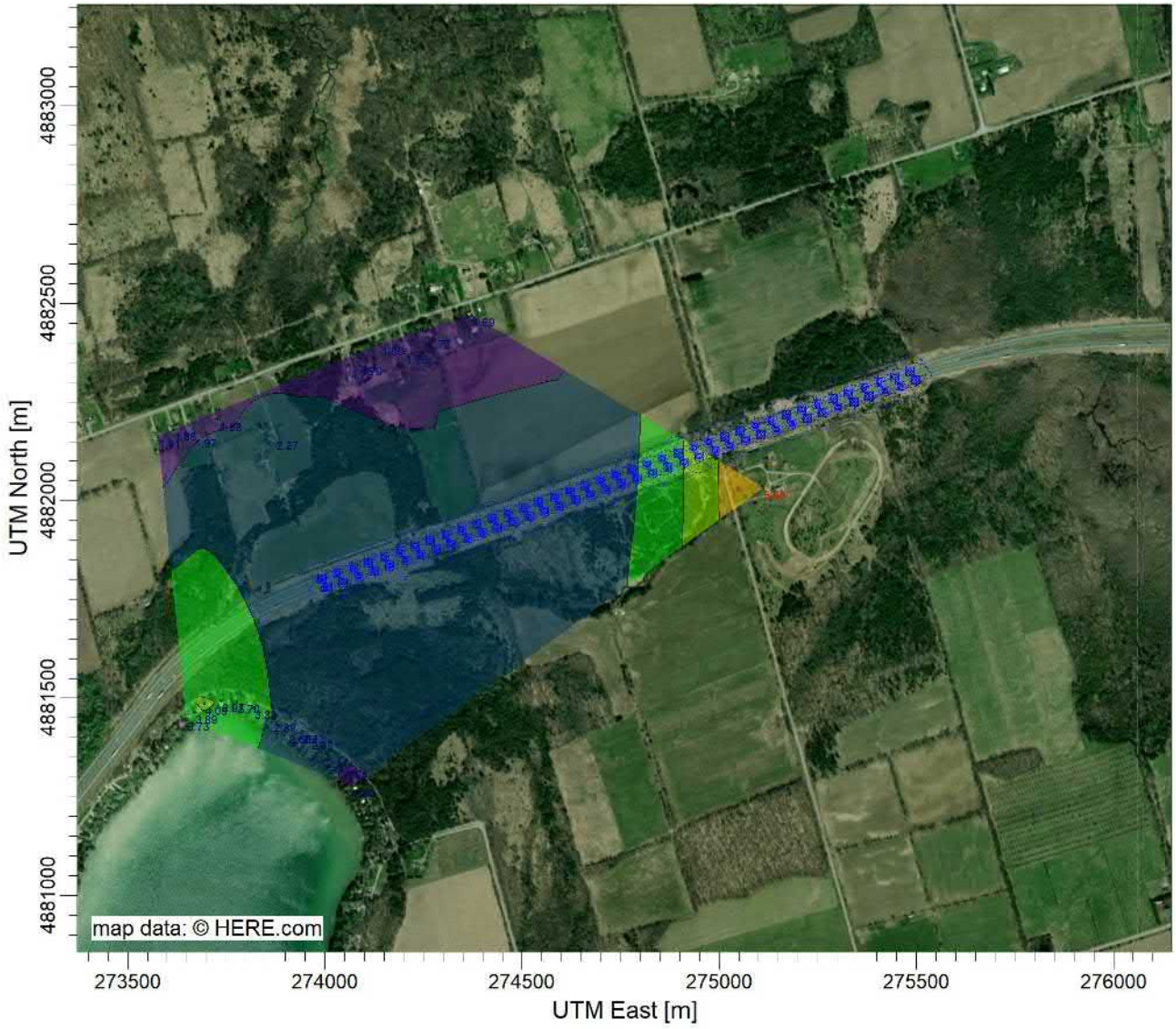
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 7.28 [ug/m^3] at (275111.65, 4882033.29)

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,453 0 0.5 km	
	MAX: **7.28 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 4 - NO2



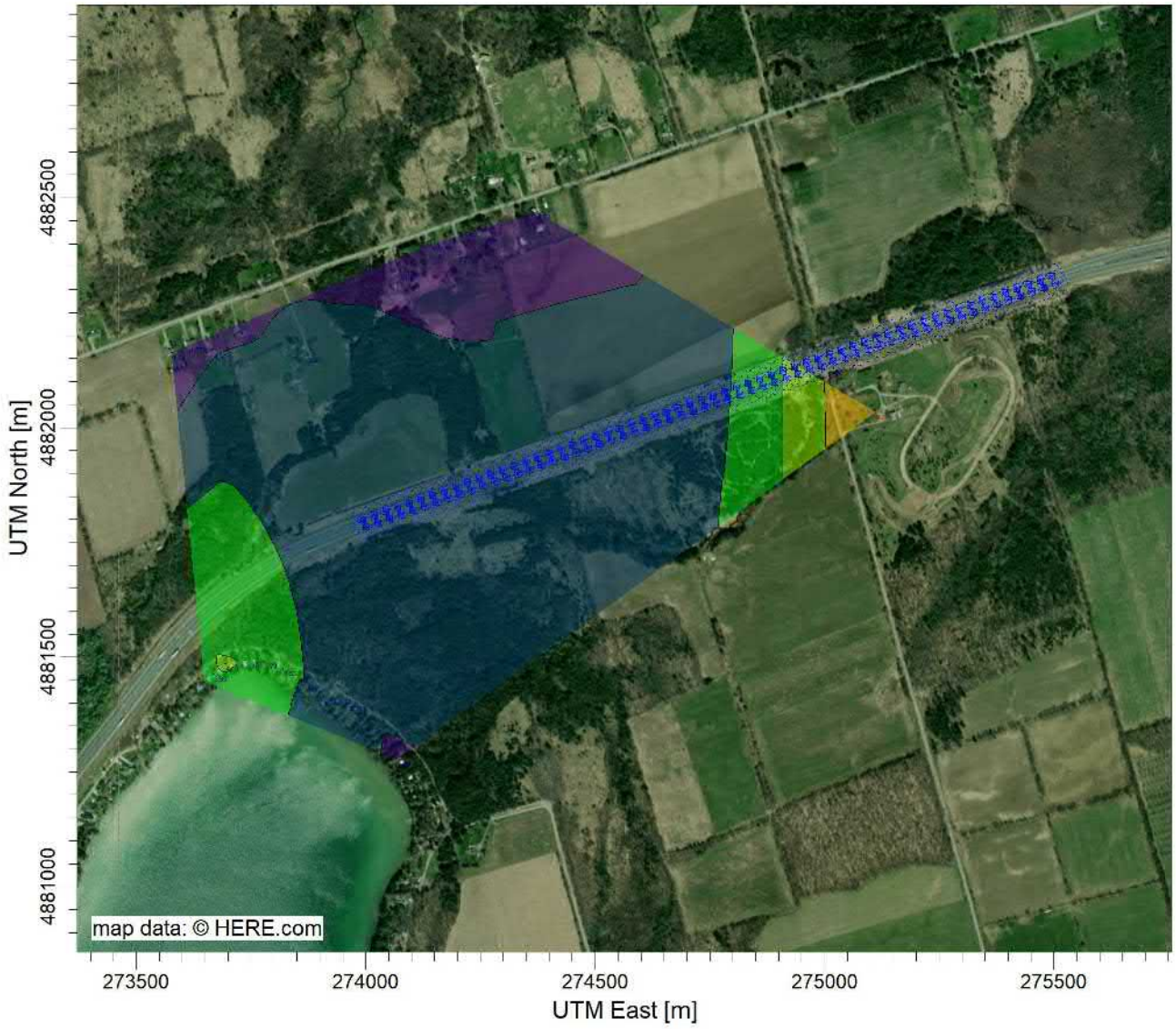
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.65 [ug/m^3] at (275111.65, 4882033.29)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,453 0 0.5 km	
	MAX: **5.65 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 4 - NO2



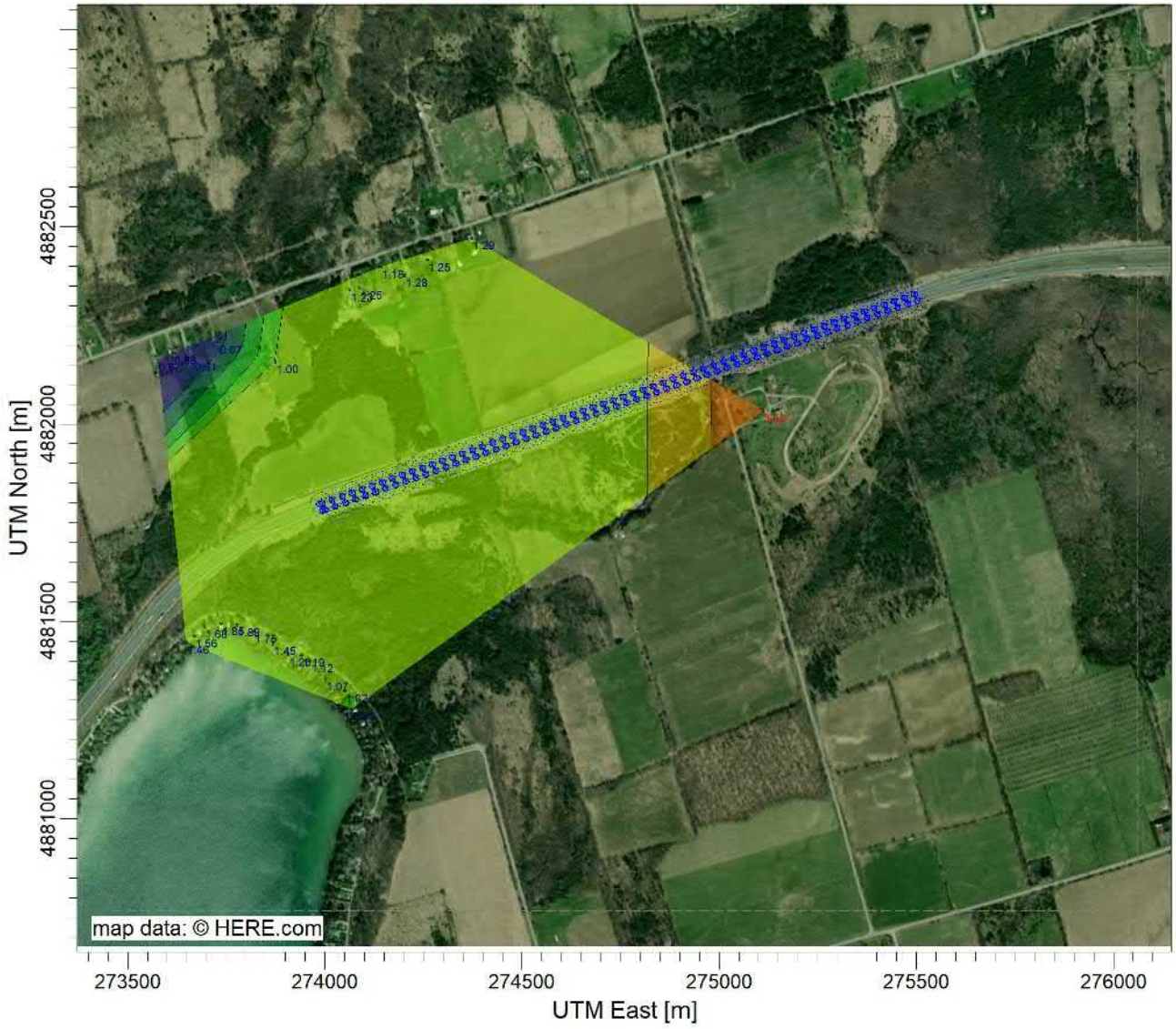
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.61 [ug/m^3] at (275111.65, 4882033.29)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **5.61 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

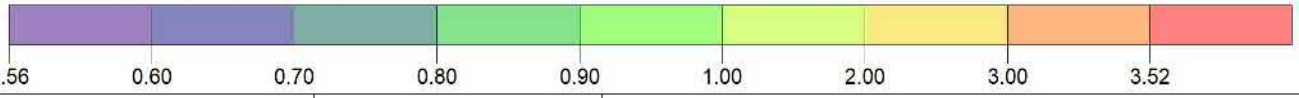
PROJECT TITLE:

Highway 401 Brighton 2022
Section 4 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

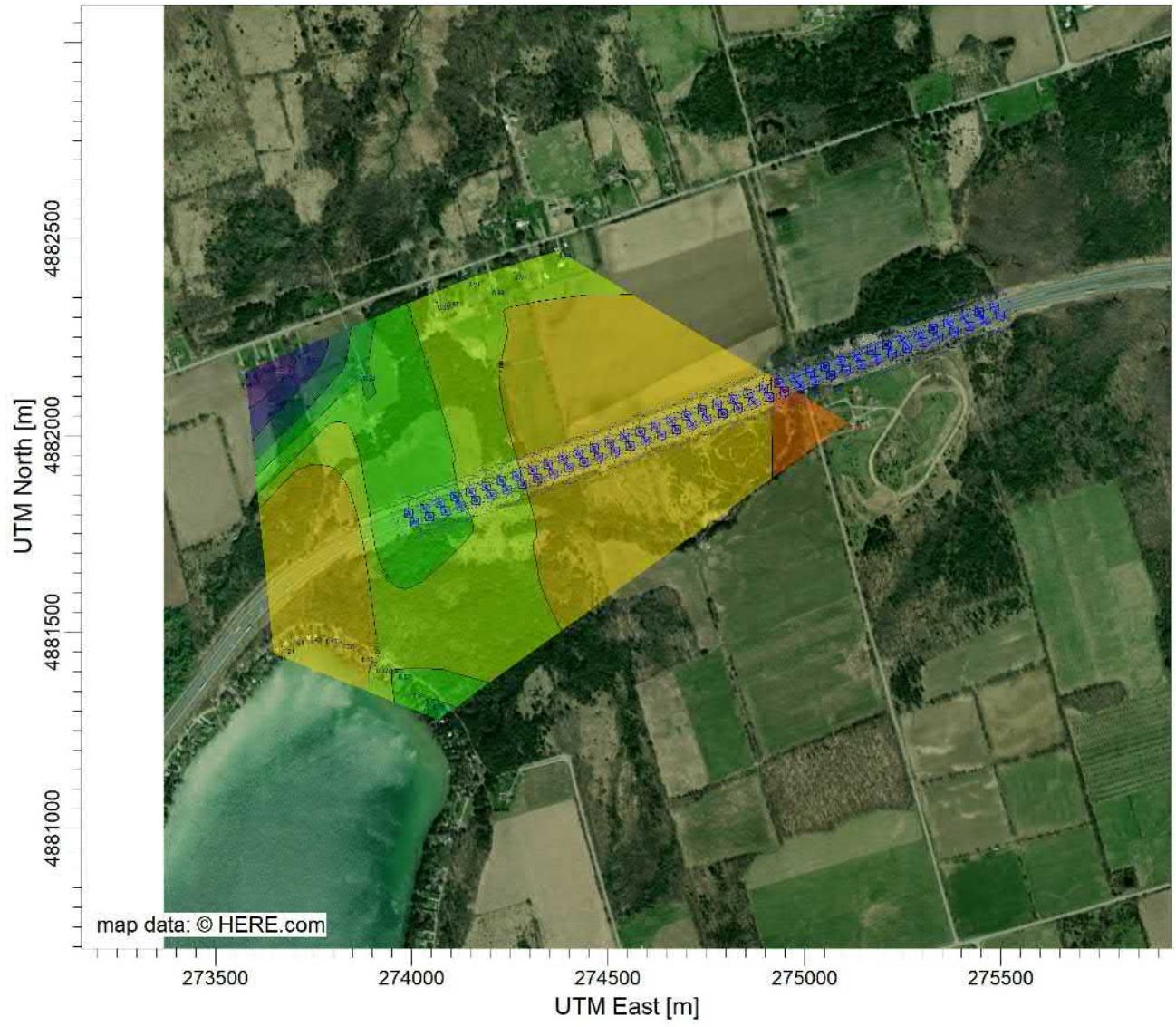
Max: 3.52 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,453 0 0.5 km	
	MAX: **3.52 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

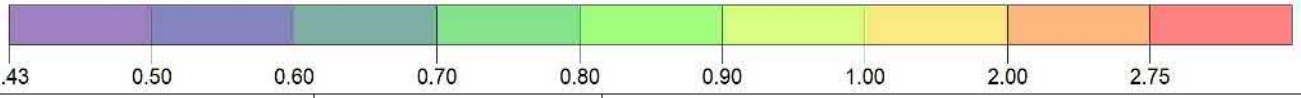
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 4 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

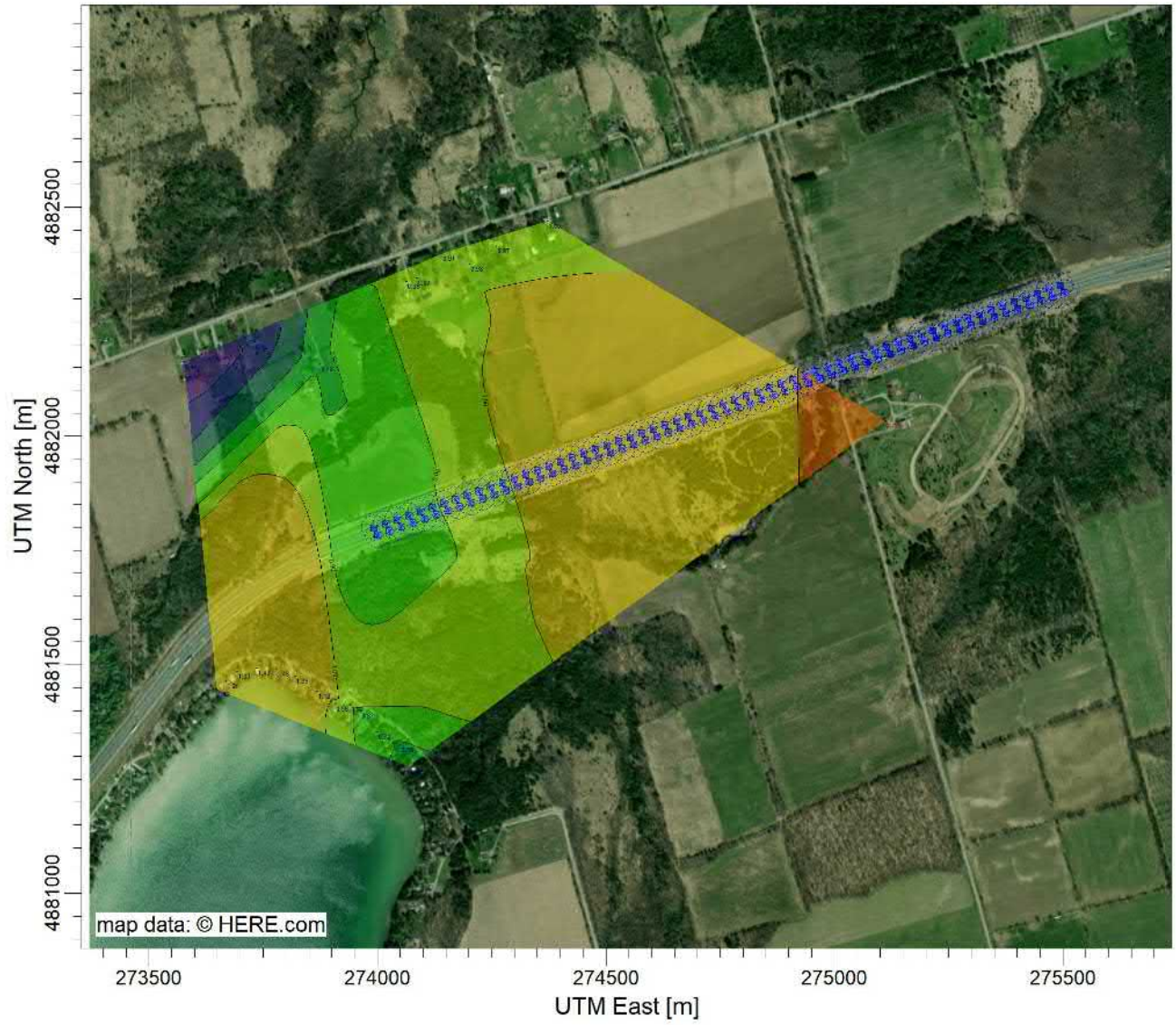
Max: 2.75 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,453 0 0.5 km	
	MAX: **2.75 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

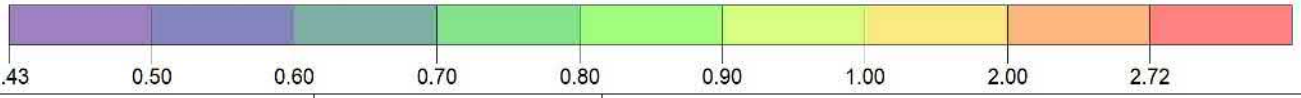
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 4 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

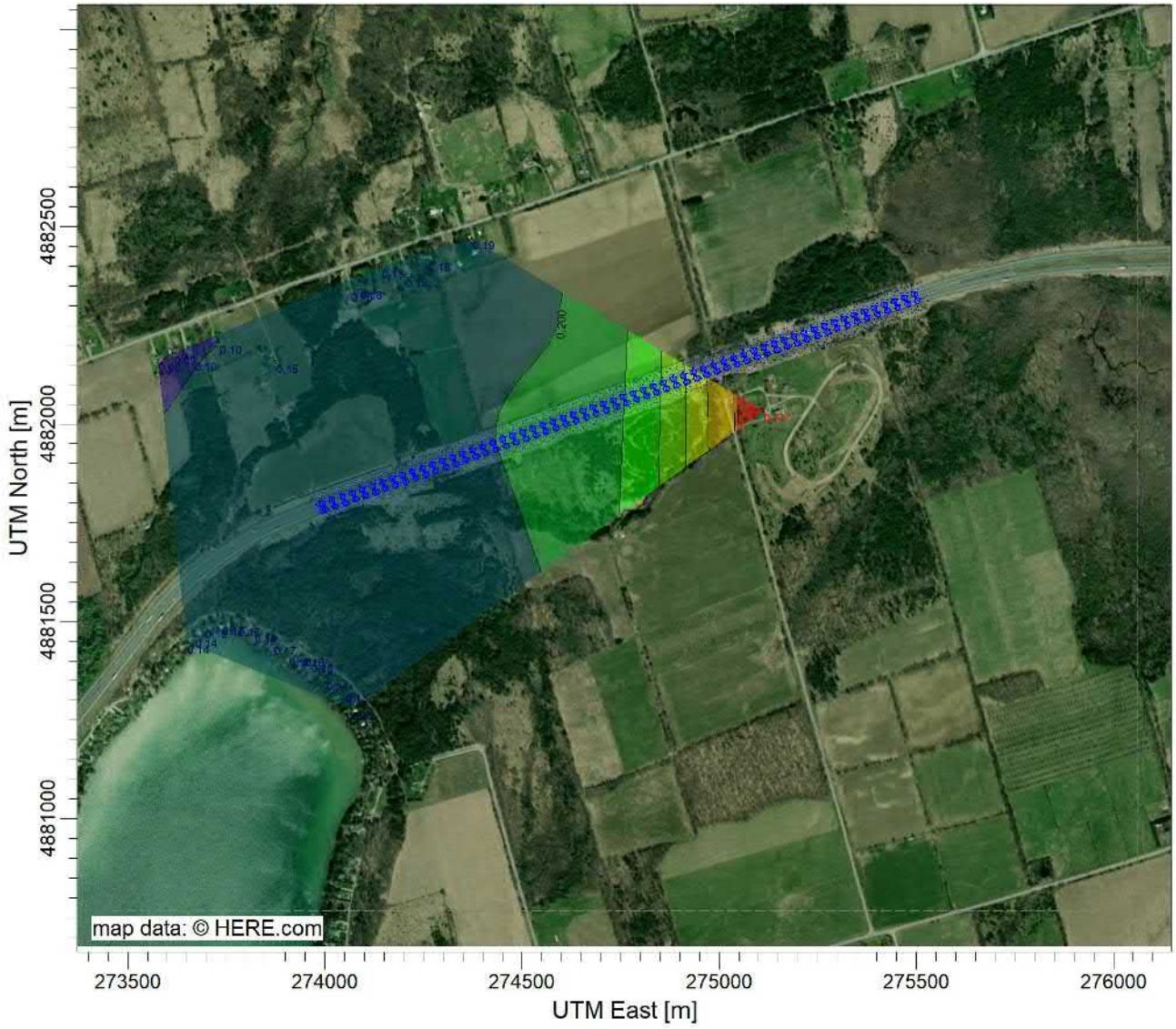
Max: 2.72 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **2.72 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

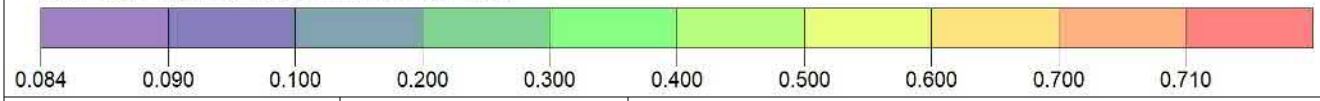
PROJECT TITLE:

Highway 401 Brighton 2022
Section 4 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

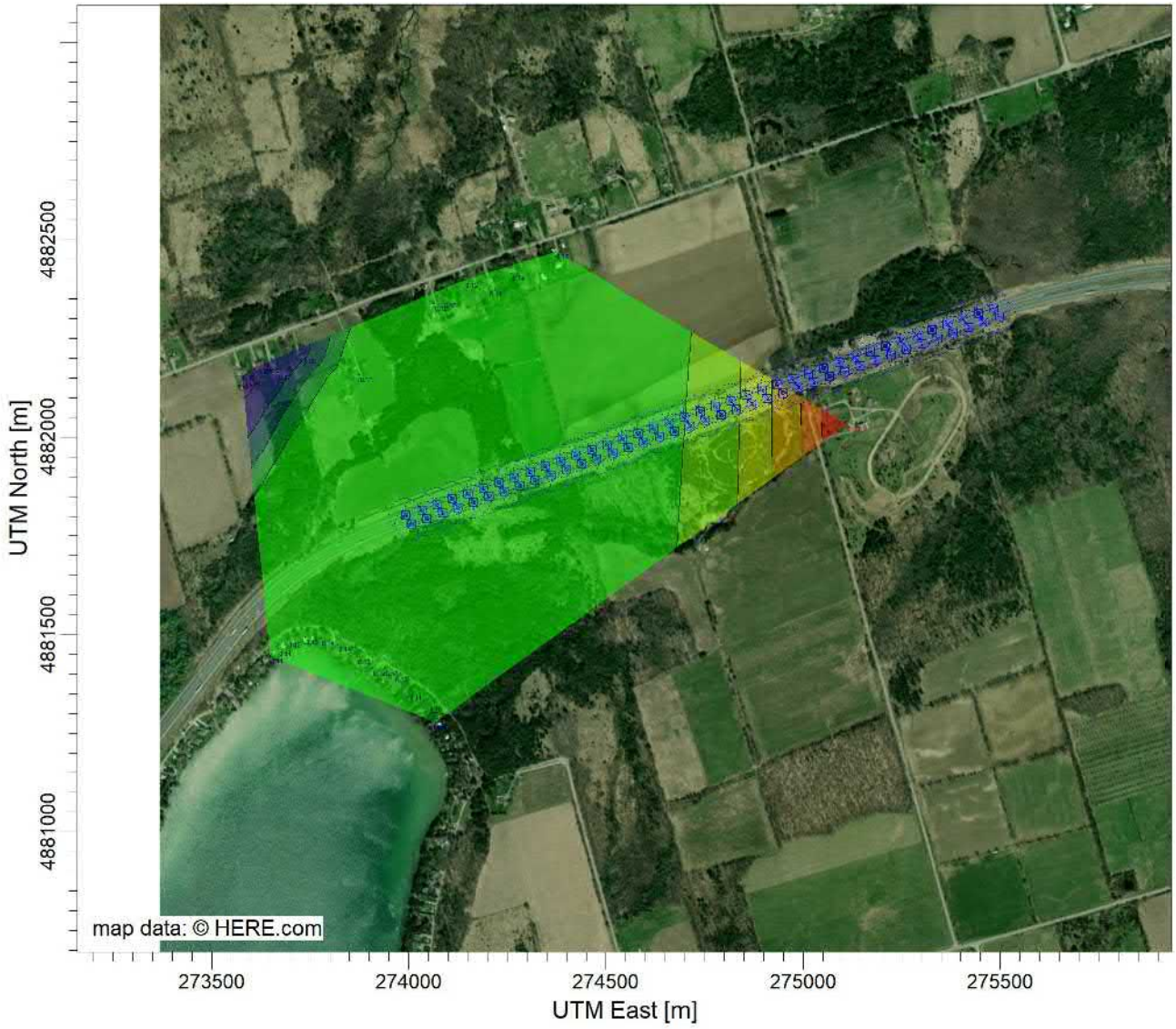
Max: 0.745 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,453 0 0.5 km	
	MAX: **0.745 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

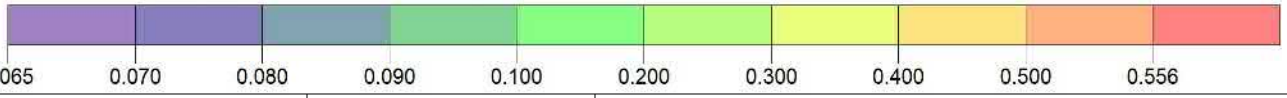
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 4 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

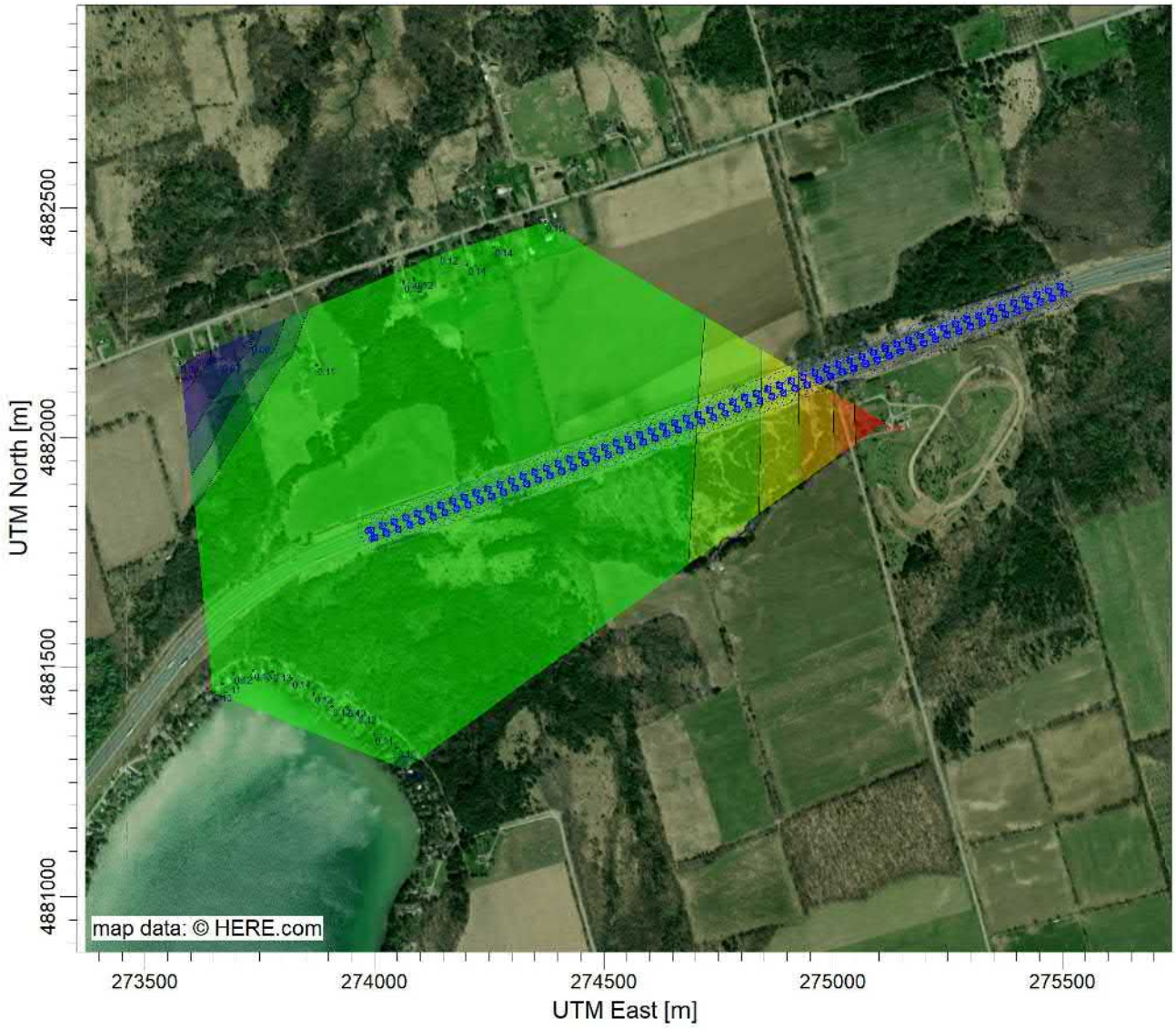
Max: 0.583 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,453 0 0.5 km	
	MAX: **0.583 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

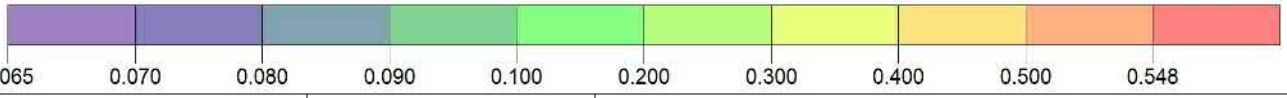
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 4 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

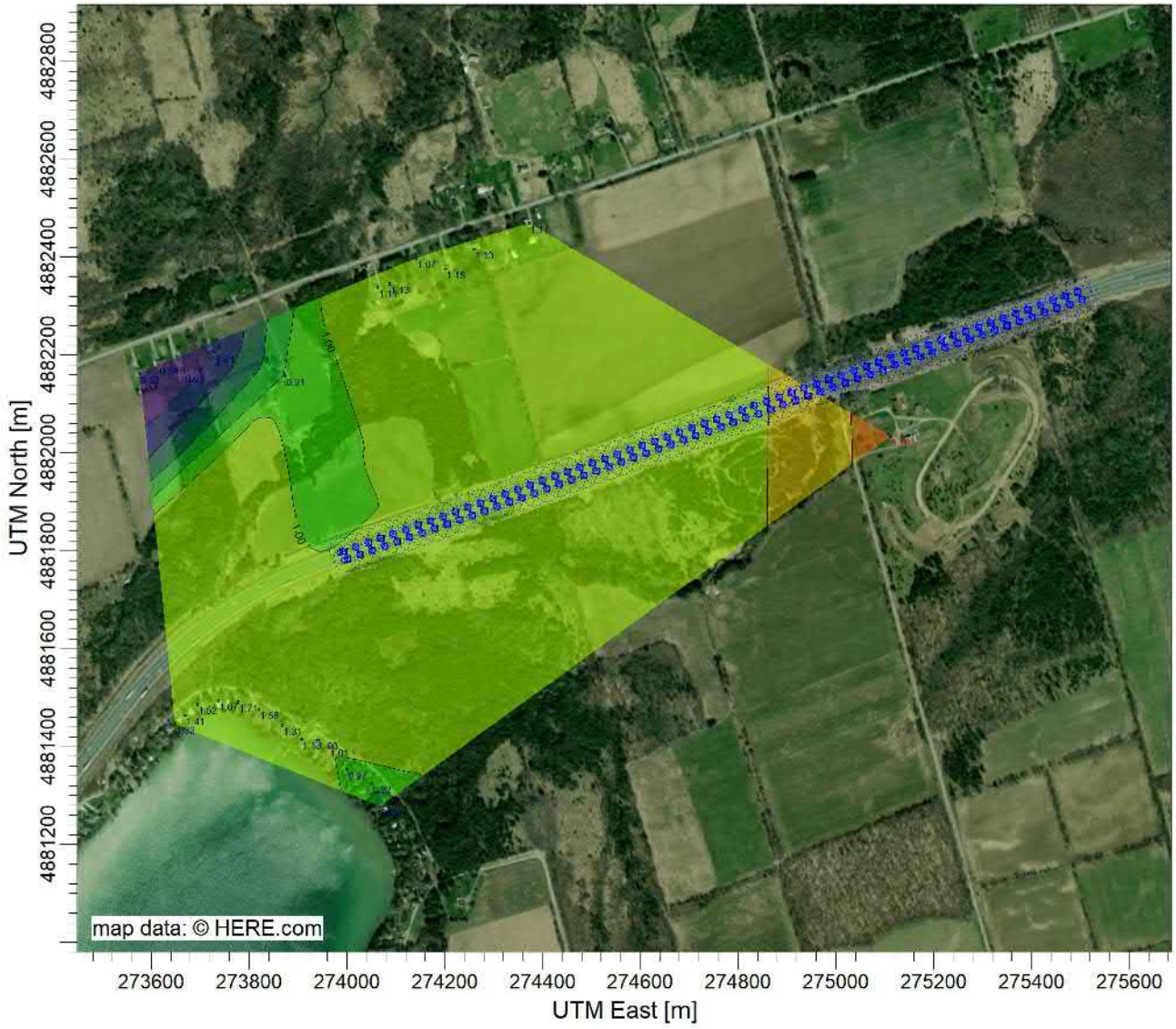
Max: 0.574 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **0.574 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

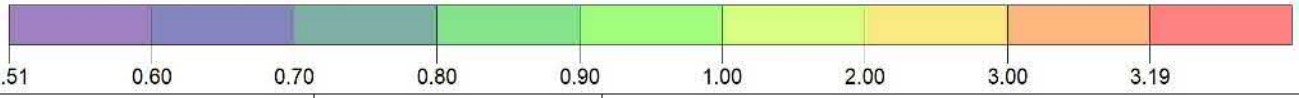
PROJECT TITLE:

Highway 401 Brighton 2022
Section 4 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

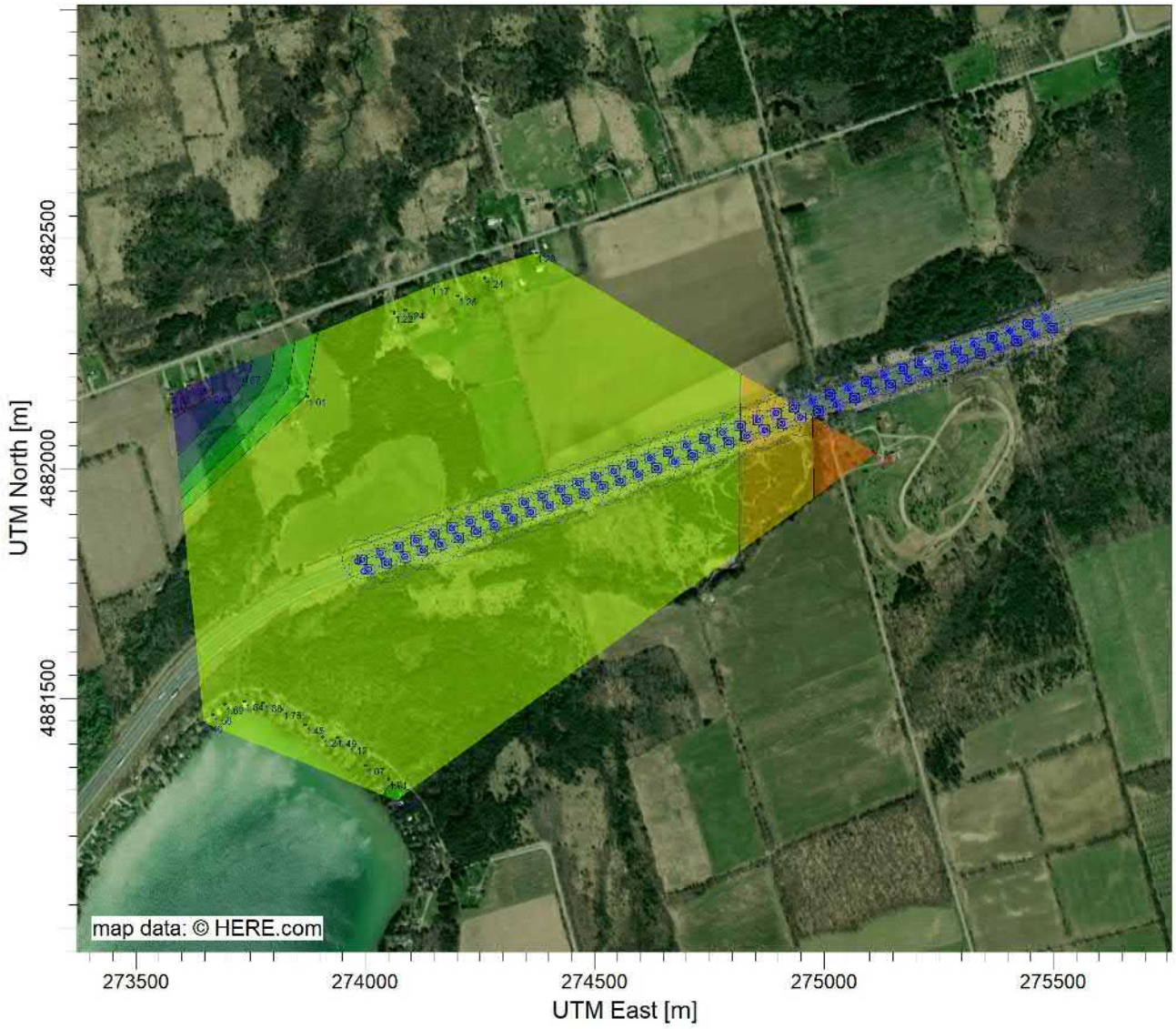
Max: 3.19 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,075 0 0.5 km	
	MAX: **3.19 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

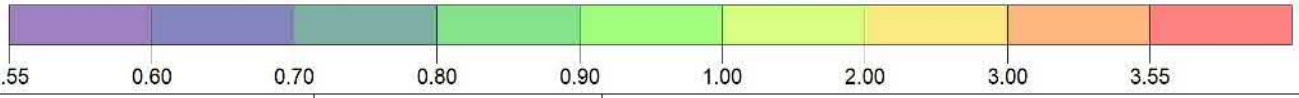
Highway 401 Brighton 2041 Full Build
Section 4 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m^3

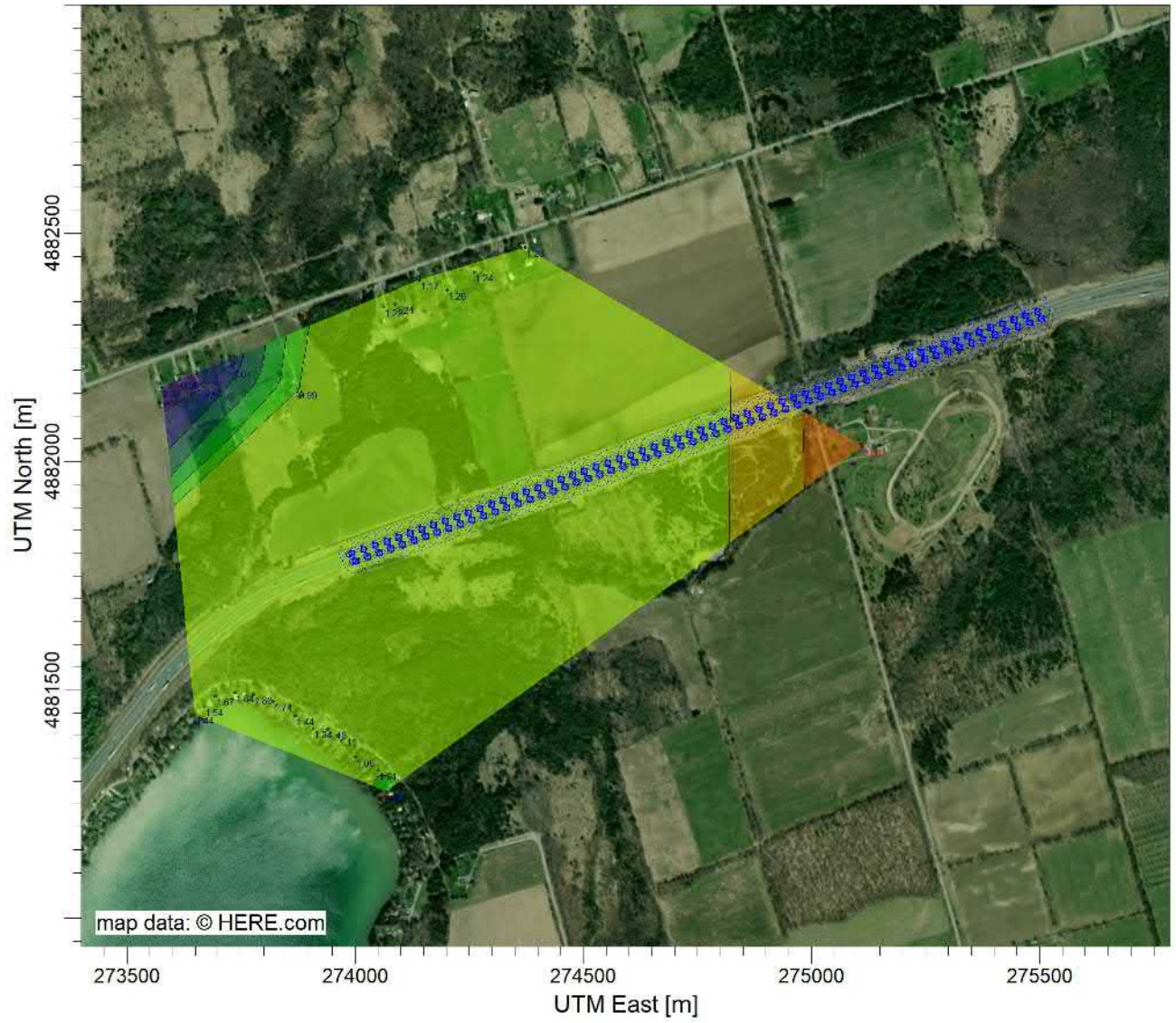
Max: 3.55 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **3.55 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

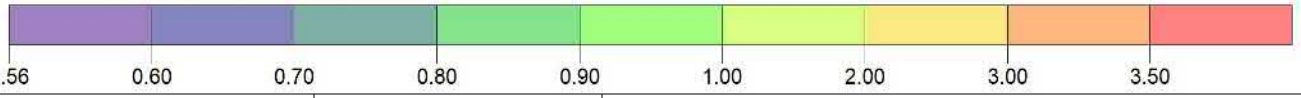
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 4 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

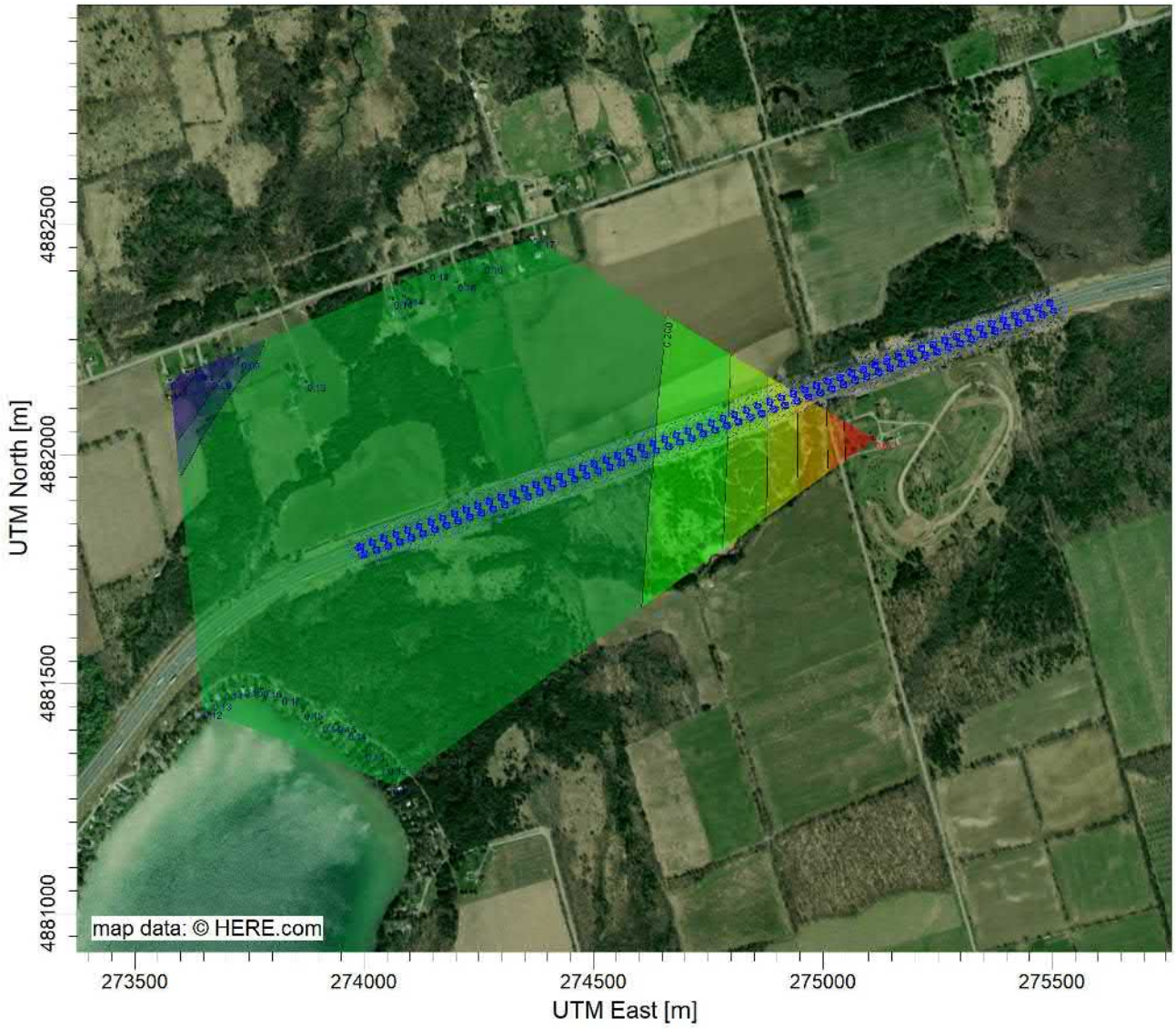
Max: 3.50 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **3.50 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

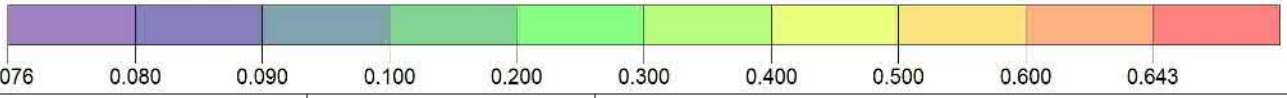
PROJECT TITLE:

Highway 401 Brighton 2022
Section 4 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

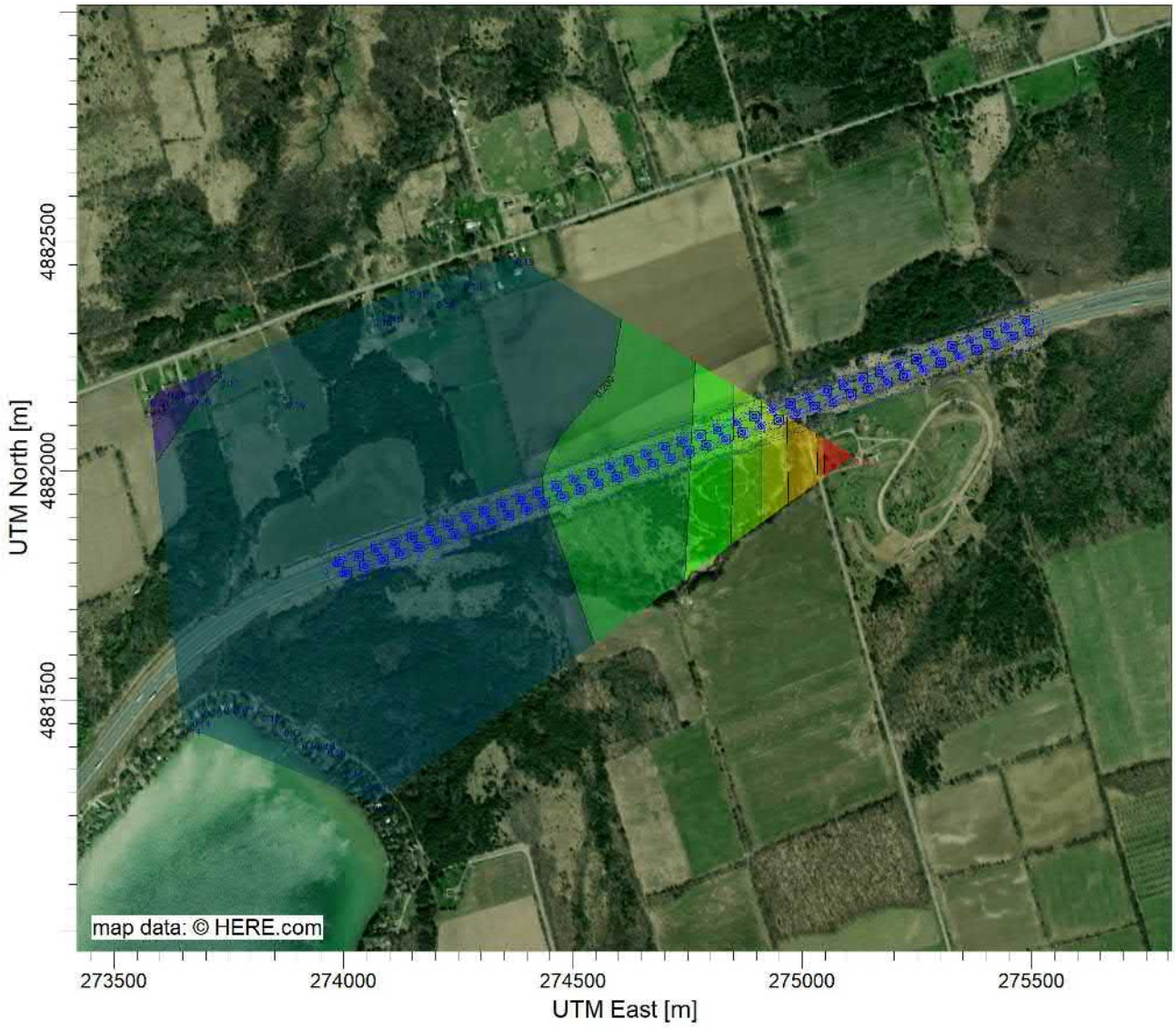
Max: 0.674 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 (0 — 0.5 km)	
	MAX: **0.674 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

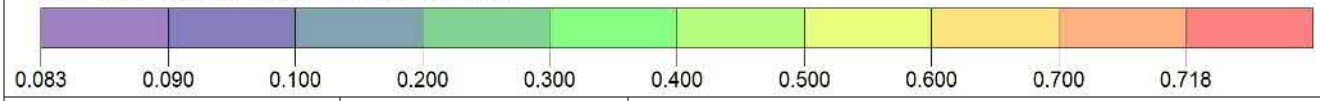
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 4 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

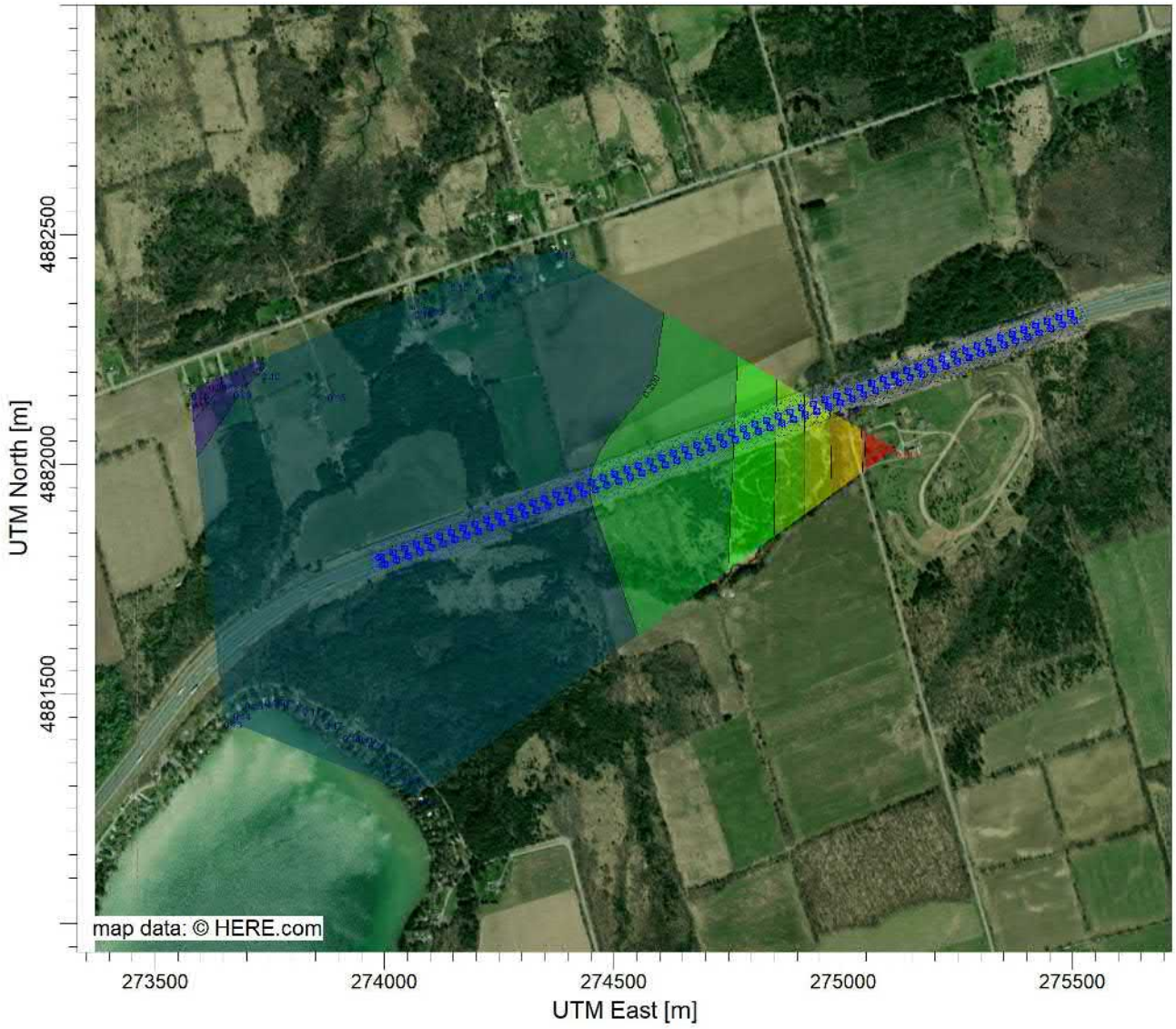
Max: 0.753 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **0.753 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

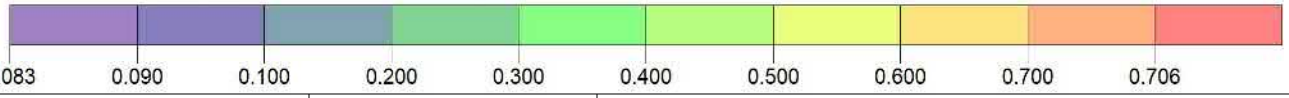
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 4 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

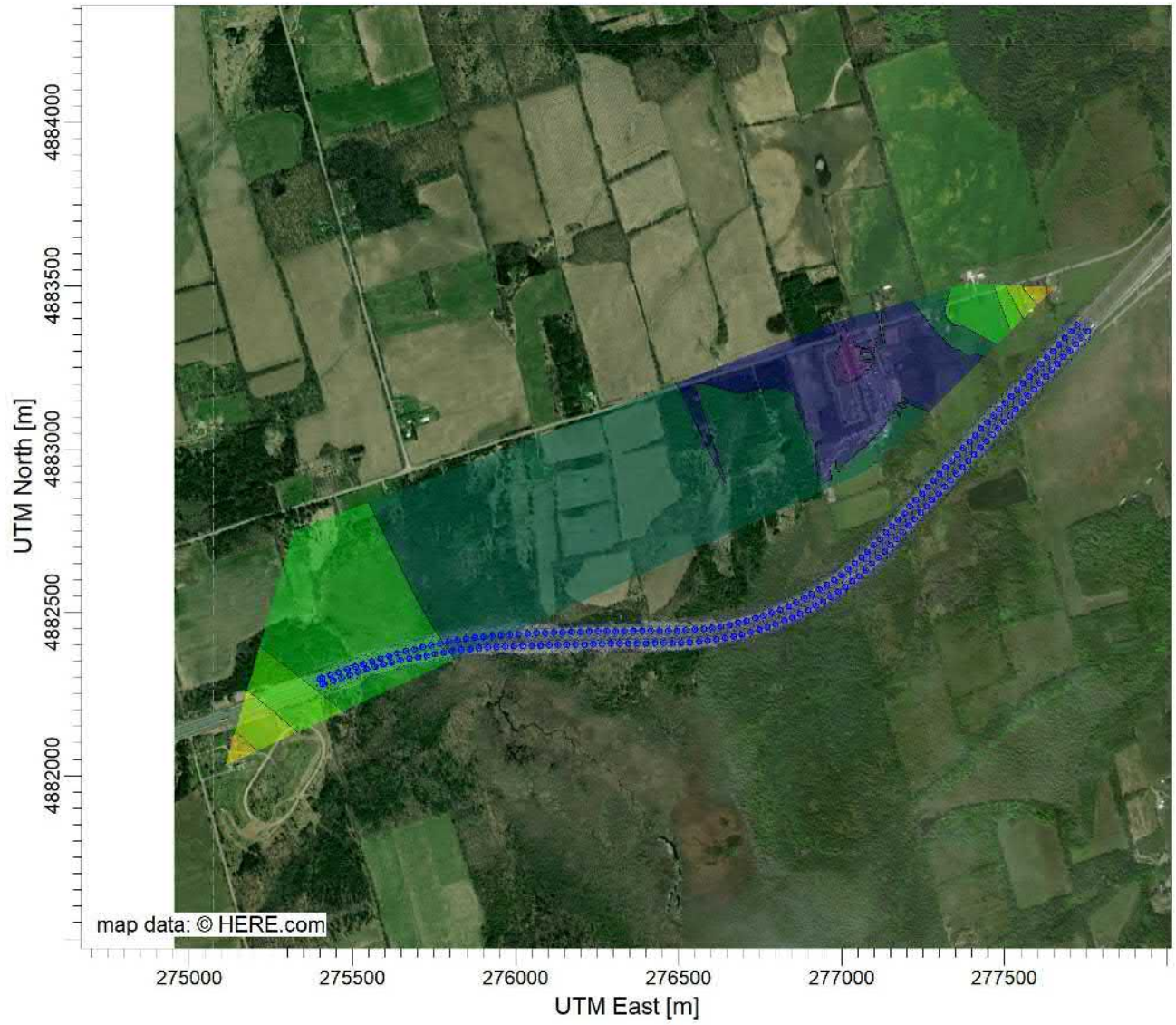
Max: 0.740 [ug/m^3] at (275111.65, 4882033.29)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **25**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **0.740 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

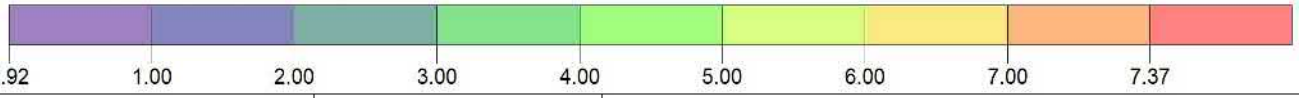
PROJECT TITLE:

Highway 401 Brighton 2022
Section 5 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

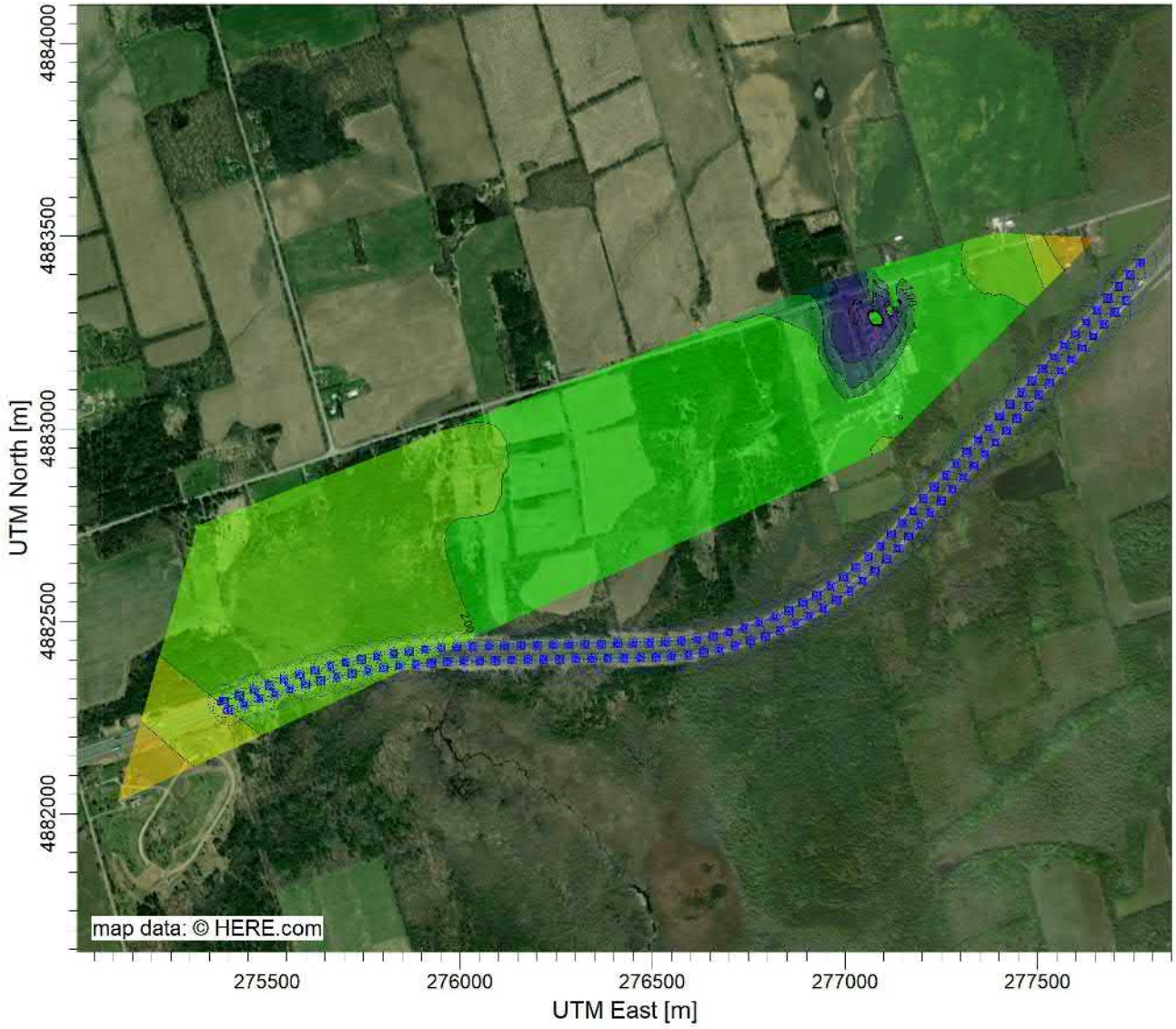
Max: 7.37 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:21,024 0 0.5 km	
	MAX: **7.37 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

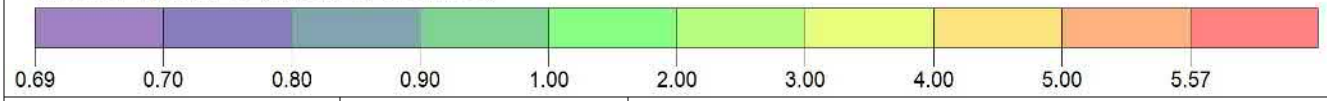
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 5 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

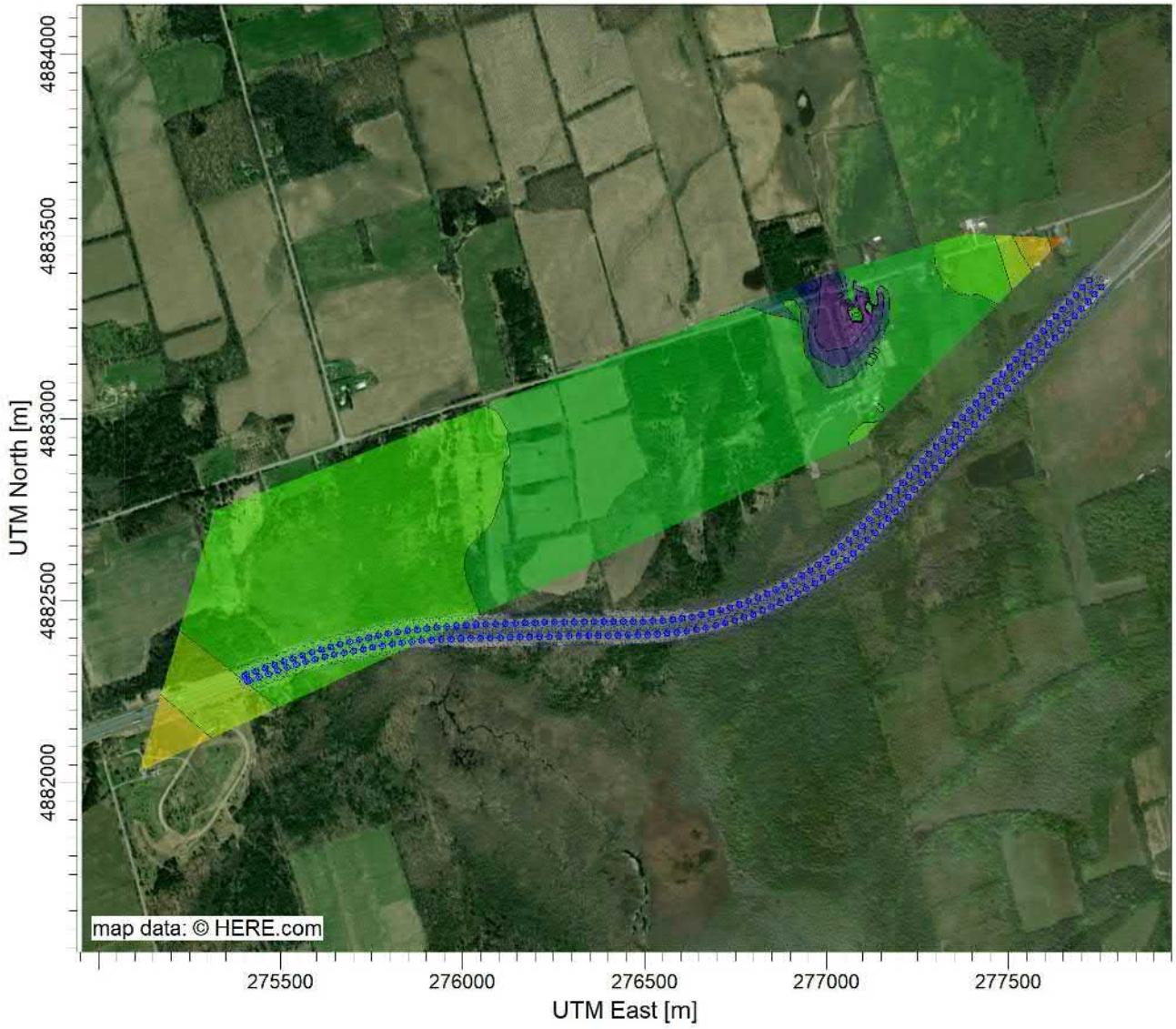
Max: 5.57 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,871 0 0.5 km	
	MAX: **5.57 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

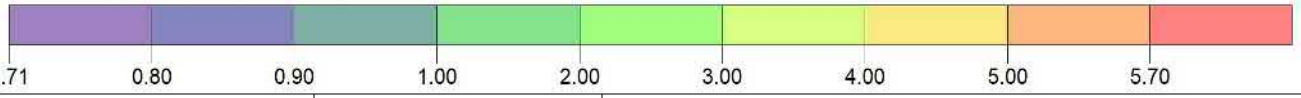
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 5 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

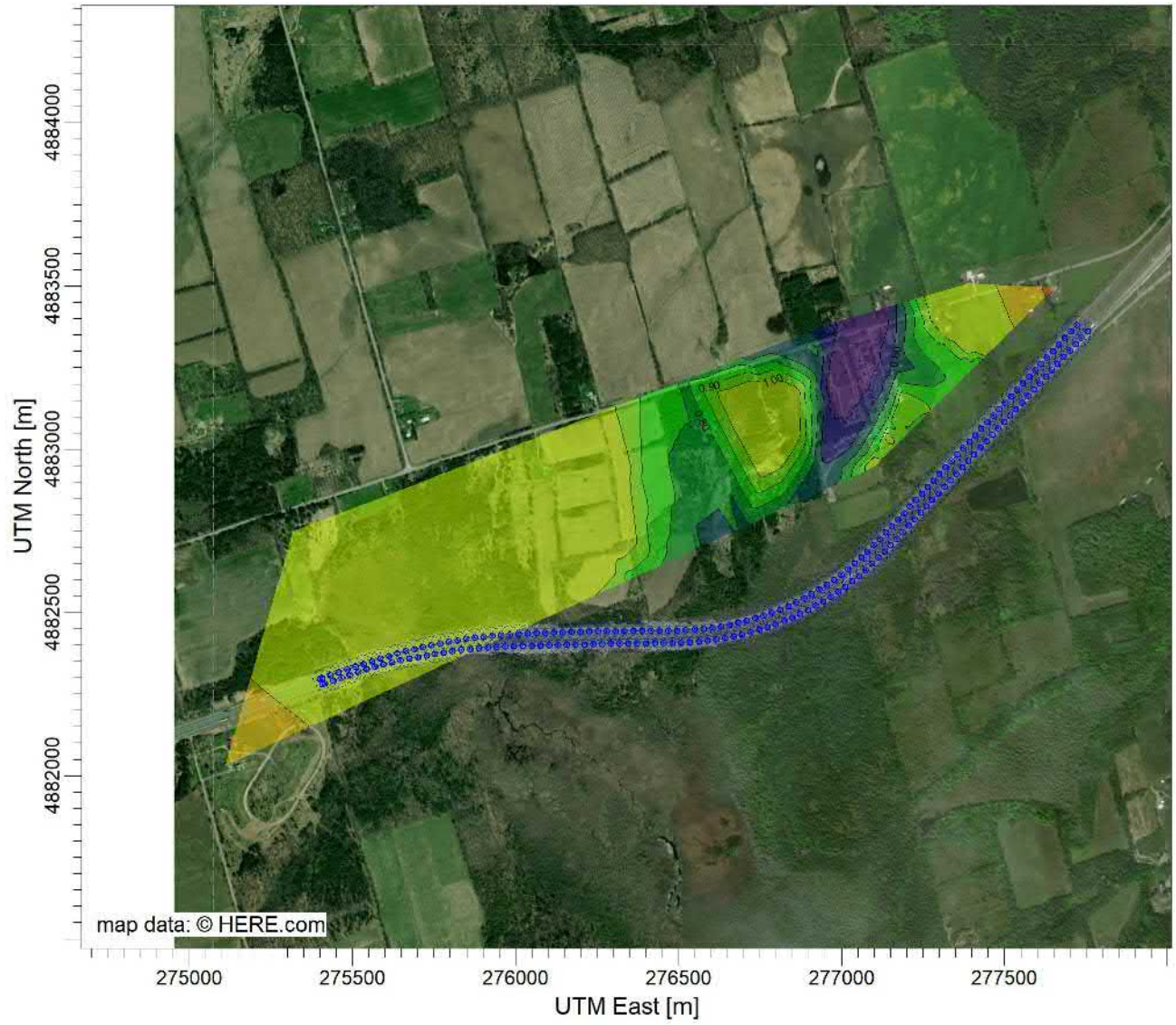
Max: 5.70 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS: NOx 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,906 0 0.5 km	
	MAX: **5.70 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-00**

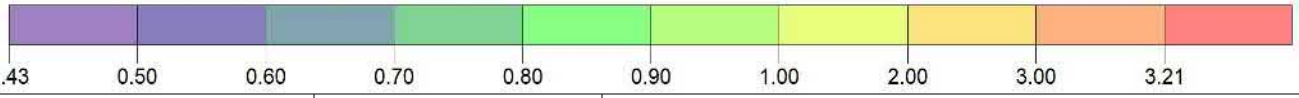
PROJECT TITLE:

Highway 401 Brighton 2022
Section 5 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

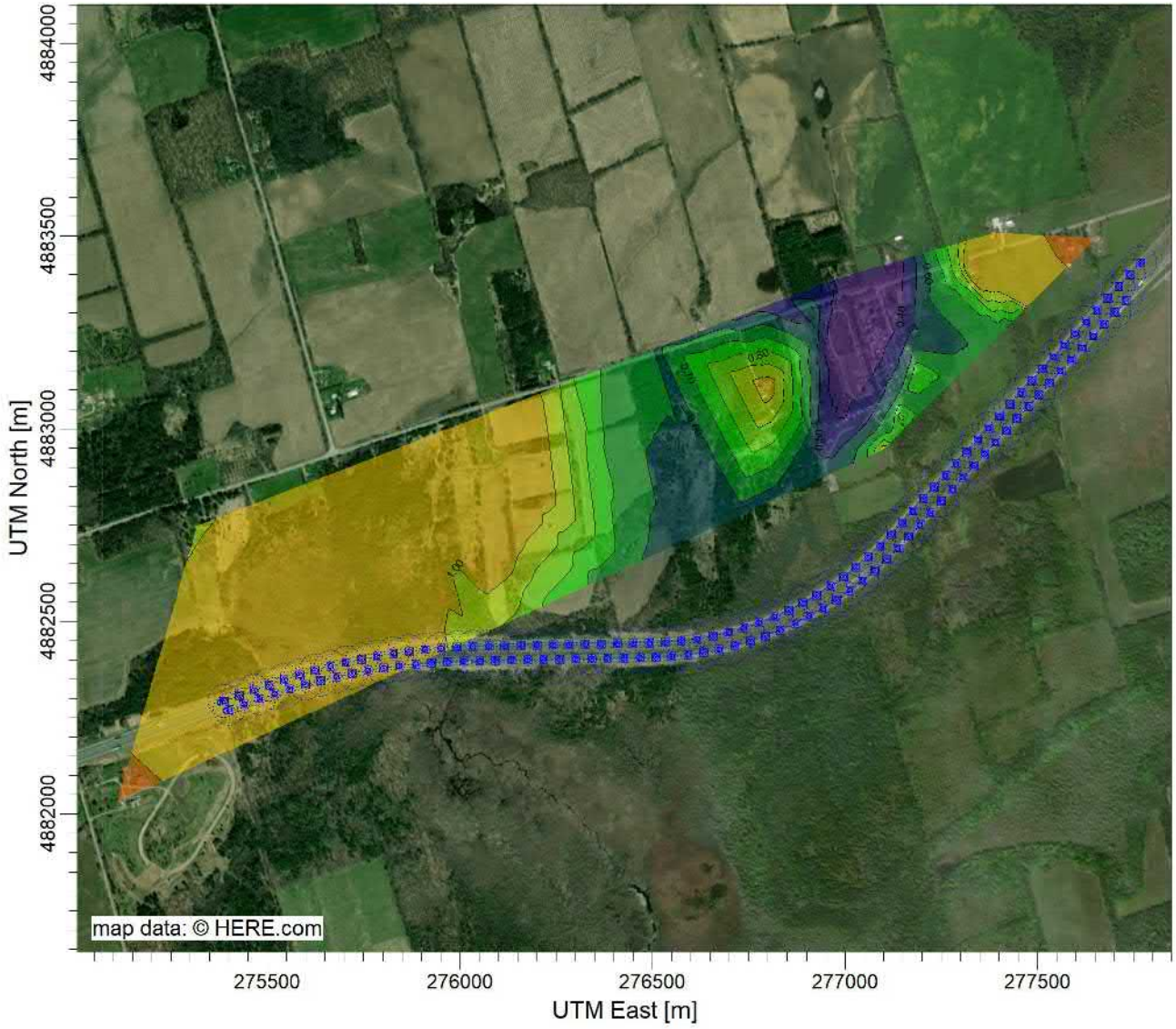
Max: 3.21 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:21,024 0 0.5 km	
	MAX: **3.21 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

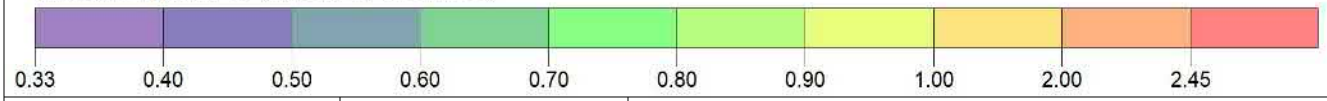
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 5 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

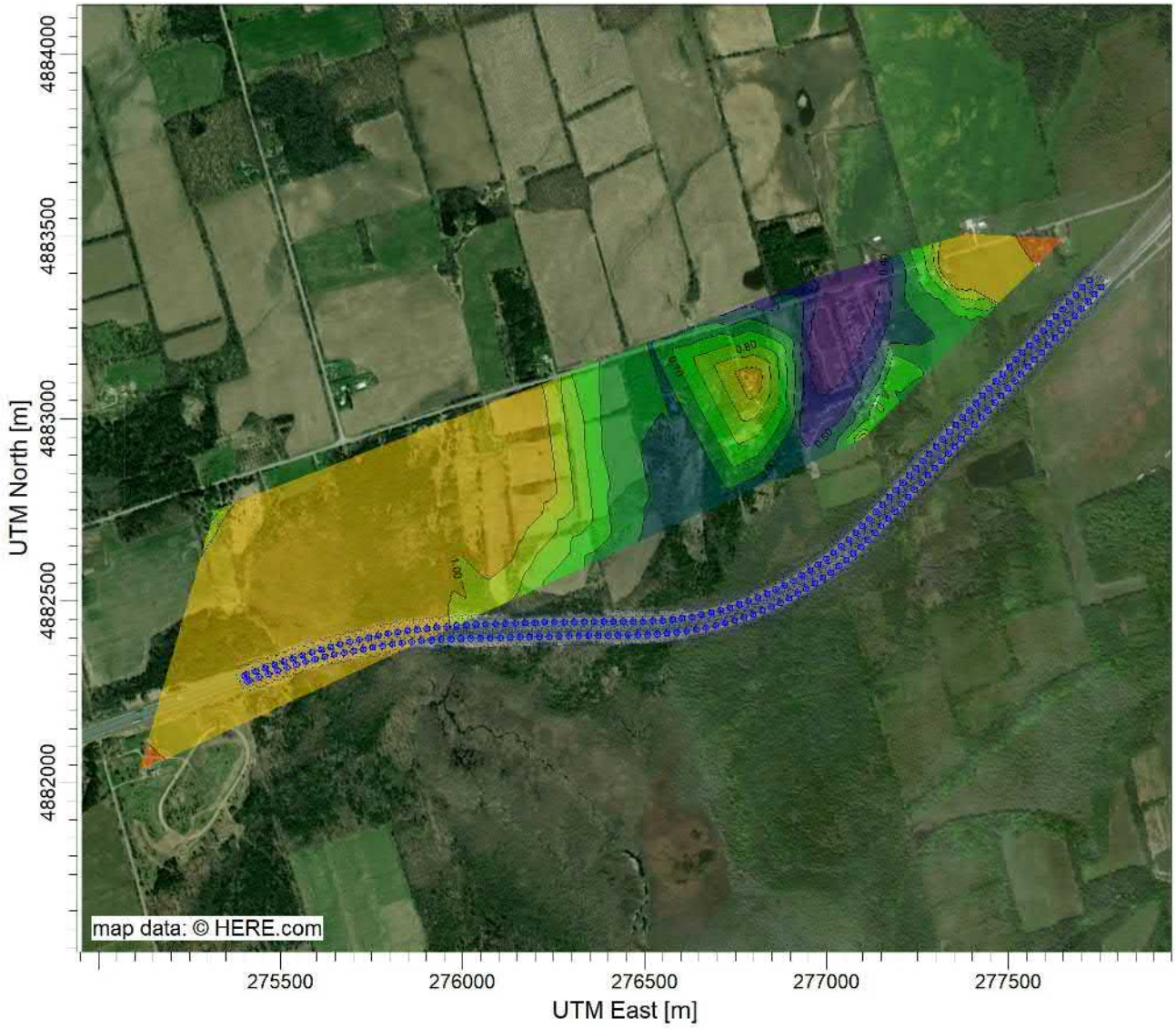
Max: 2.45 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,871 0 0.5 km	
	MAX: **2.45 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

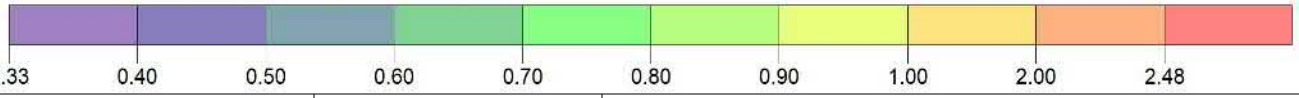
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 5 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

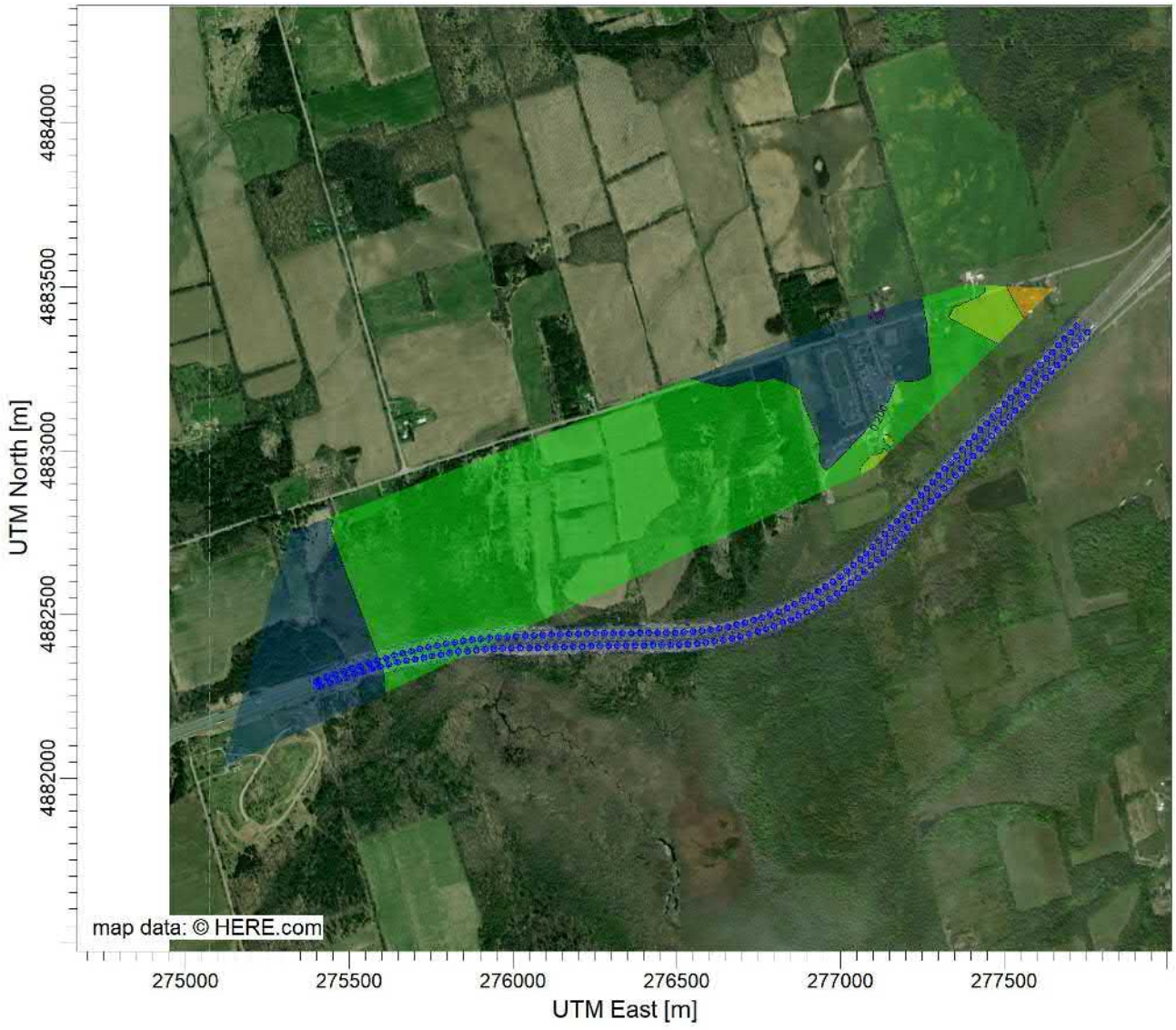
Max: 2.48 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS: NOx 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,906 0 0.5 km	
	MAX: **2.48 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-00**

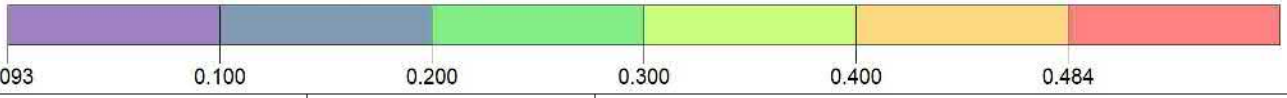
PROJECT TITLE:

Highway 401 Brighton 2022
Section 5 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

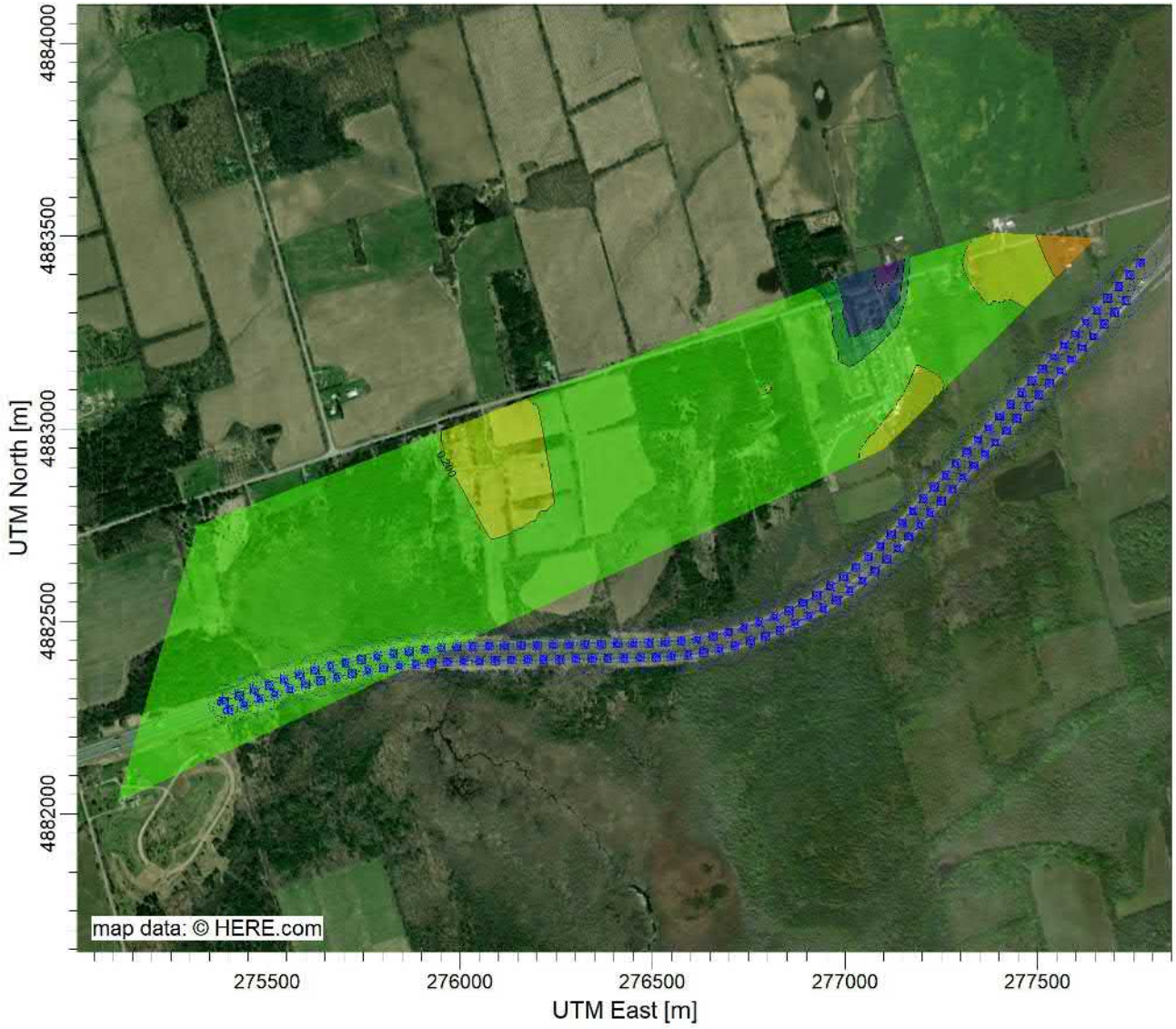
Max: 0.484 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:21,022 0 0.5 km	
	MAX: **0.484 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 5 - NO2



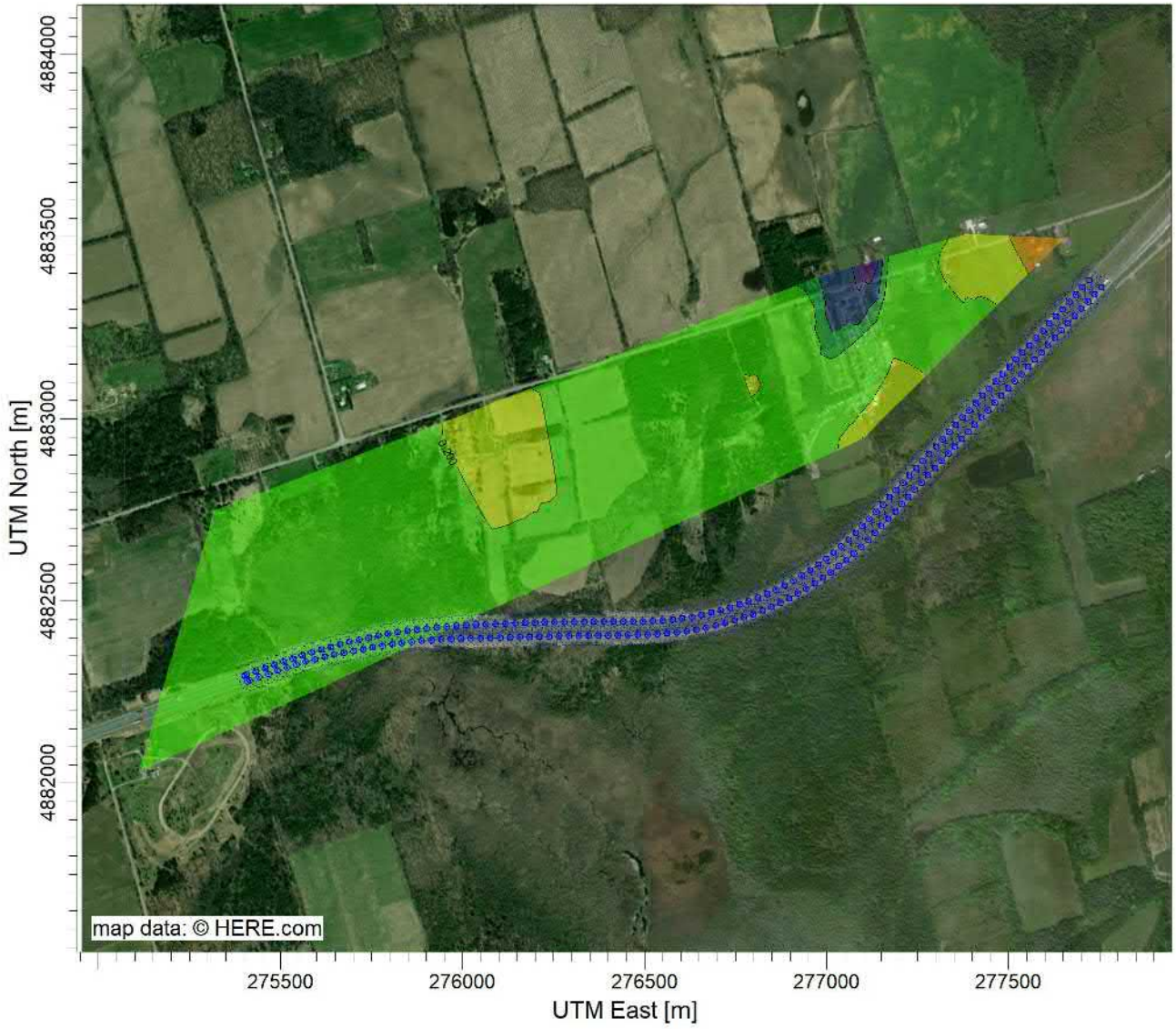
POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

Max: 0.399 [ug/m^3] at (277652.27, 4883494.89)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:17,870 — 0 — 0.5 km	
	MAX: **0.399 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 5 - NO2



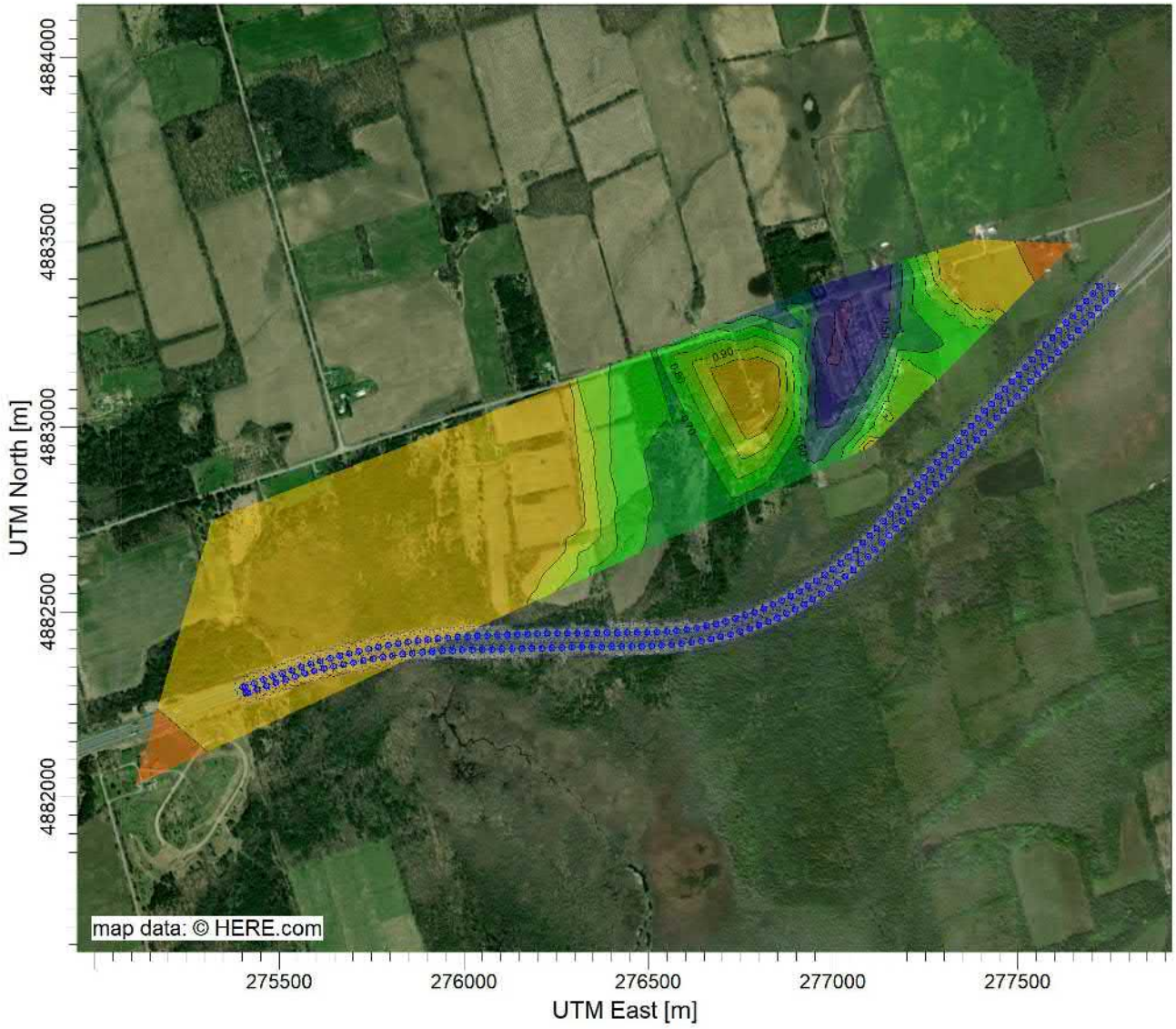
POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

Max: 0.374 [ug/m^3] at (277652.27, 4883494.89)

COMMENTS:	SOURCES:	COMPANY NAME:	
NOx Annual	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,904 0 0.5 km	
	MAX: **0.374 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-00**

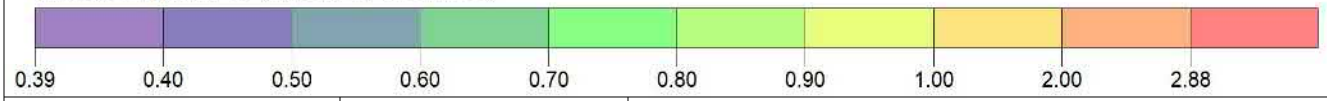
PROJECT TITLE:

Highway 401 Brighton 2022
Section 5 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

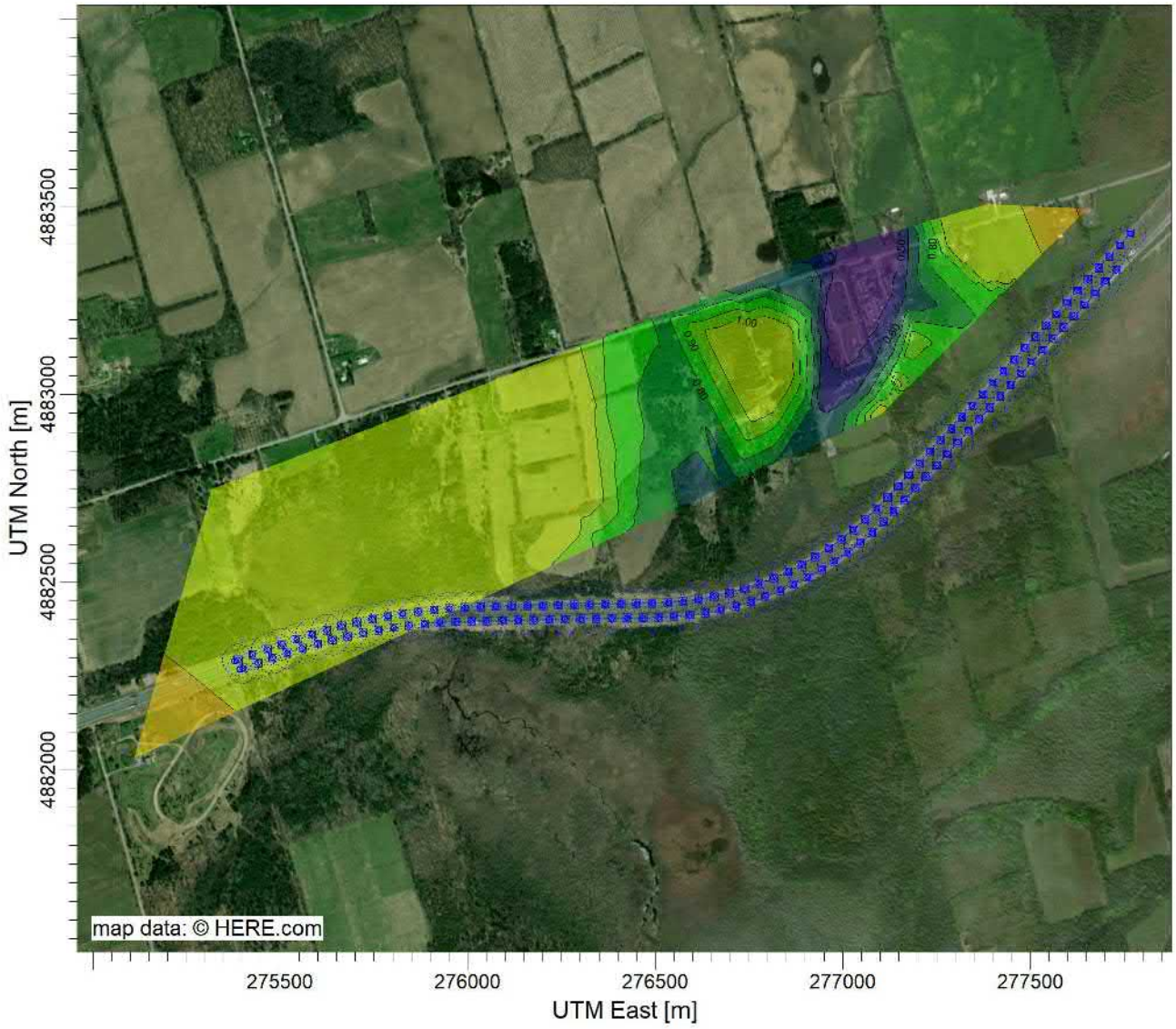
Max: 2.88 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,633 0 0.5 km	
	MAX: **2.88 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

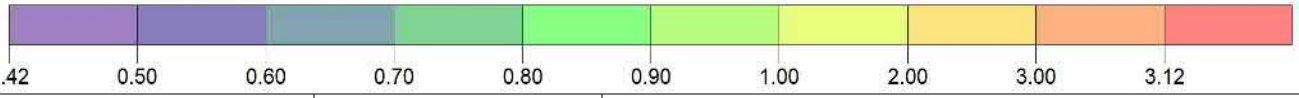
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 5 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

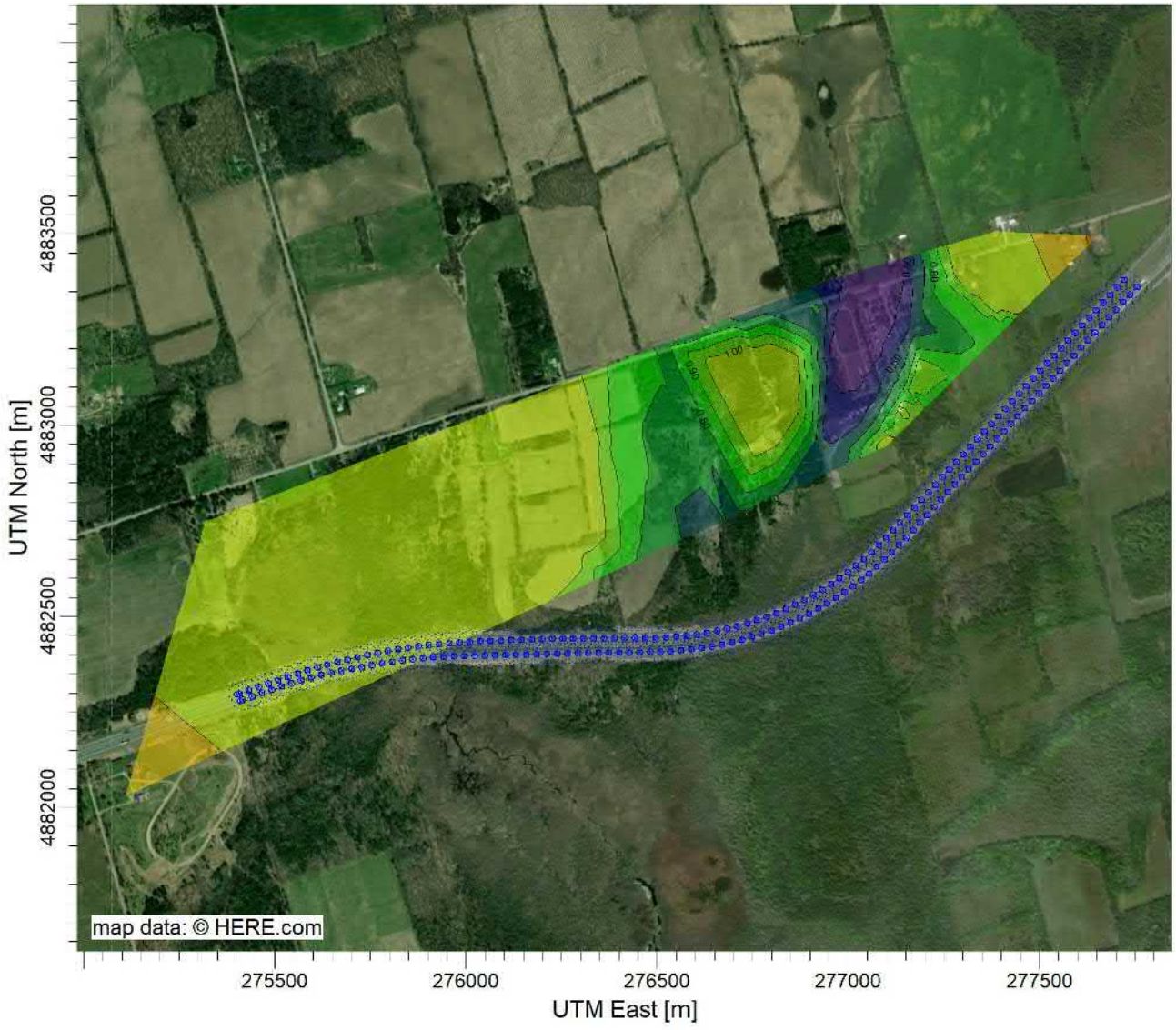
Max: 3.12 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,352 0 0.5 km	
	MAX: **3.12 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

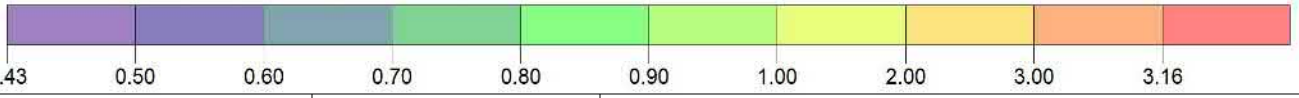
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 5 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

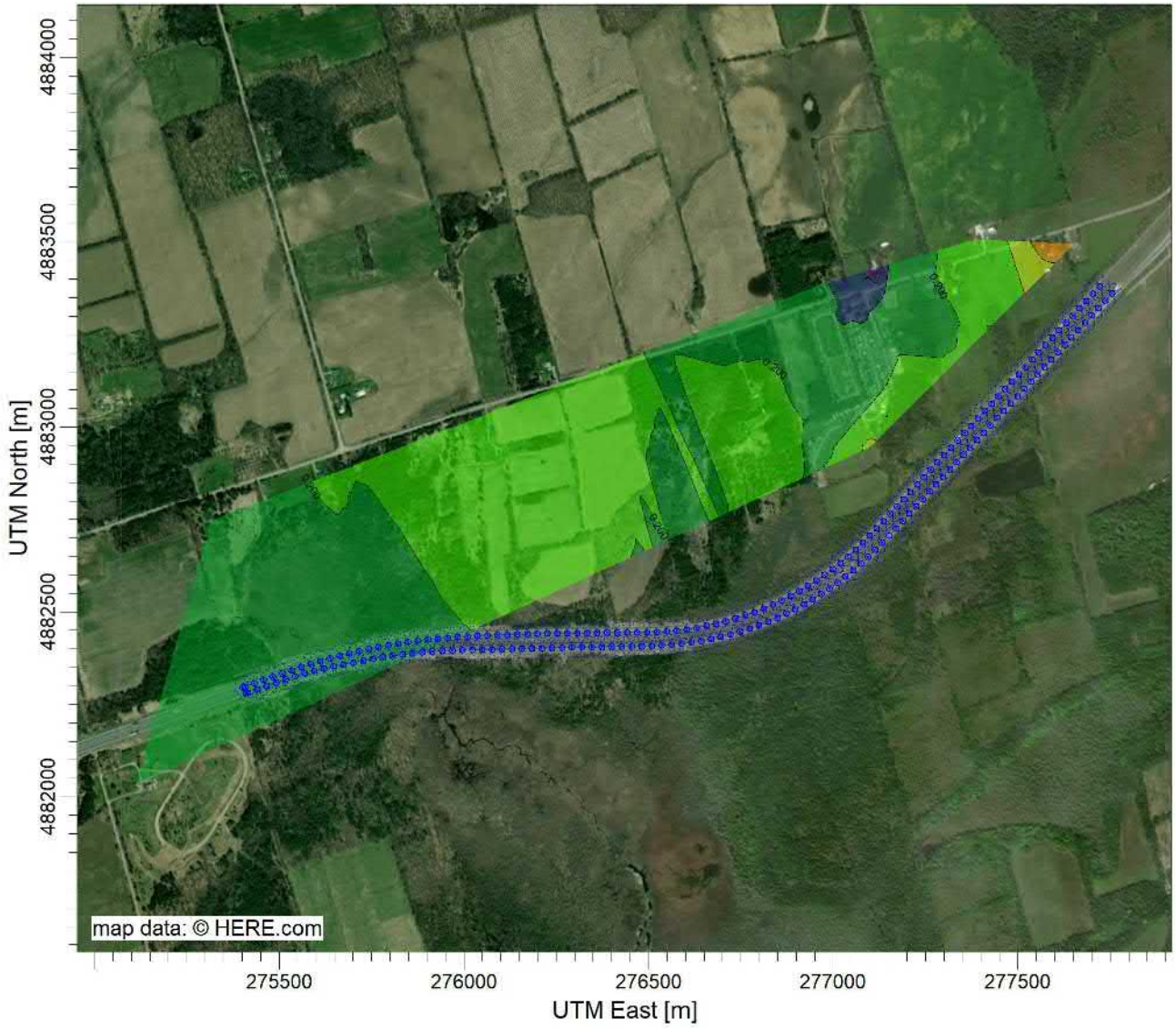
Max: 3.16 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,000 0 0.5 km	
	MAX: **3.16 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 5 - PM2.5



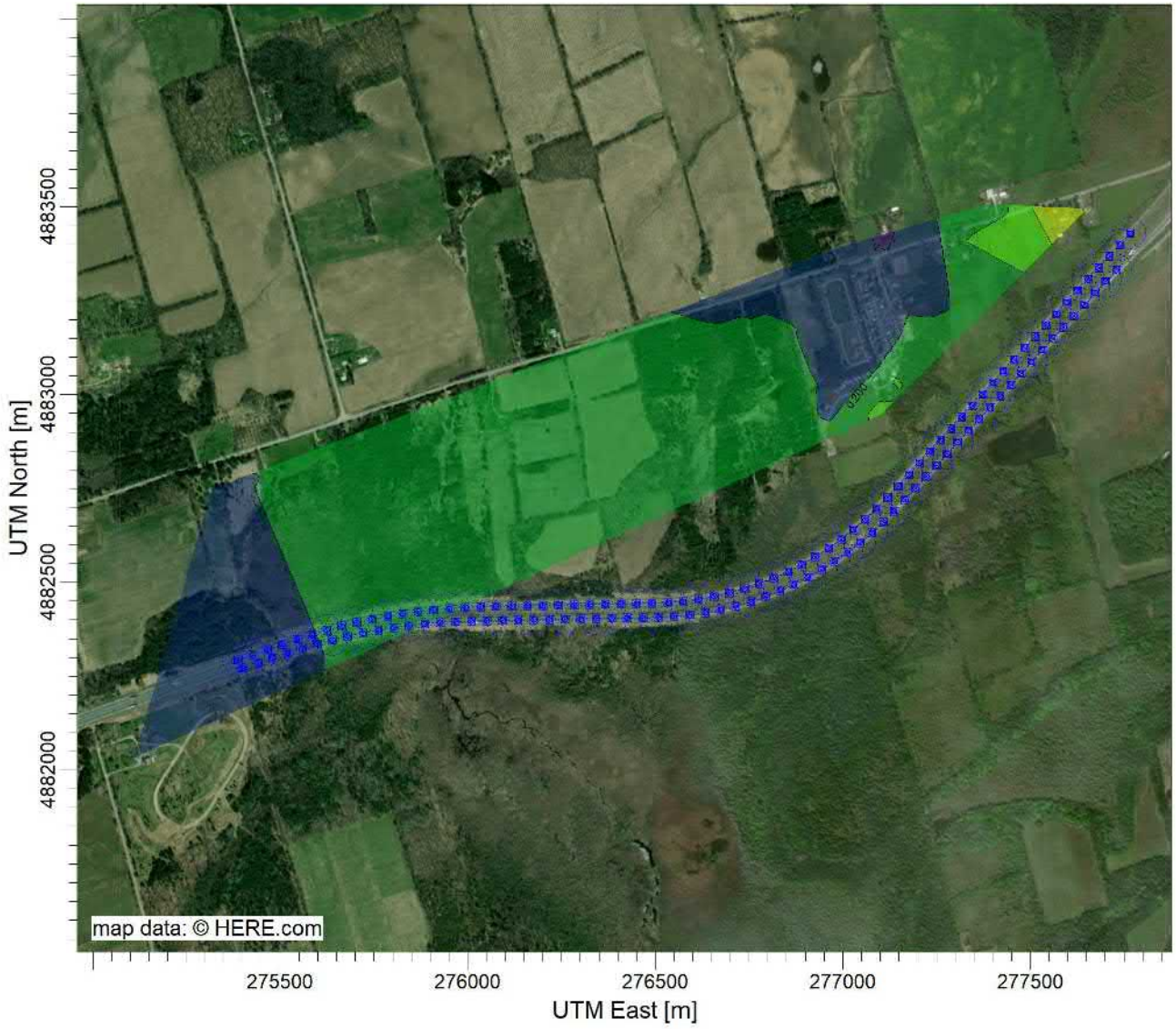
POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

Max: 0.435 [ug/m^3] at (277652.27, 4883494.89)

COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,633 0 0.5 km	
	MAX: **0.435 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 5 - PM2.5



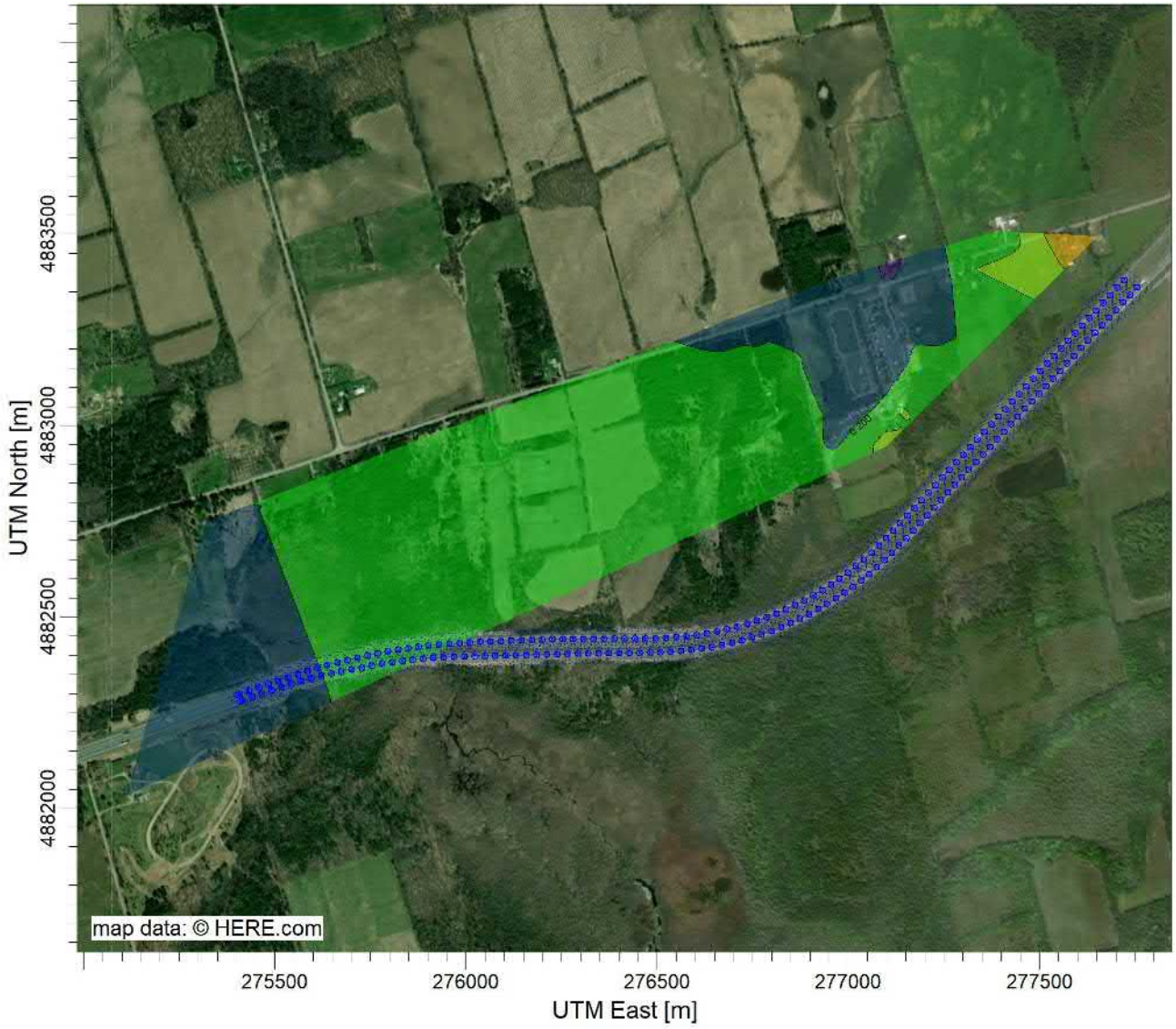
POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

Max: 0.506 [ug/m^3] at (277652.27, 4883494.89)

COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,351 0 0.5 km	
	MAX: **0.506 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

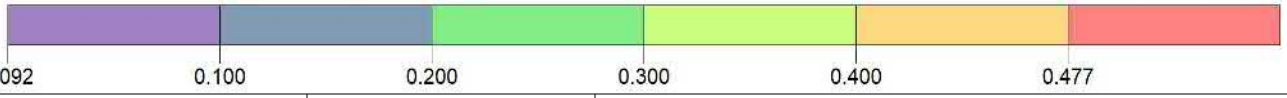
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 5 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

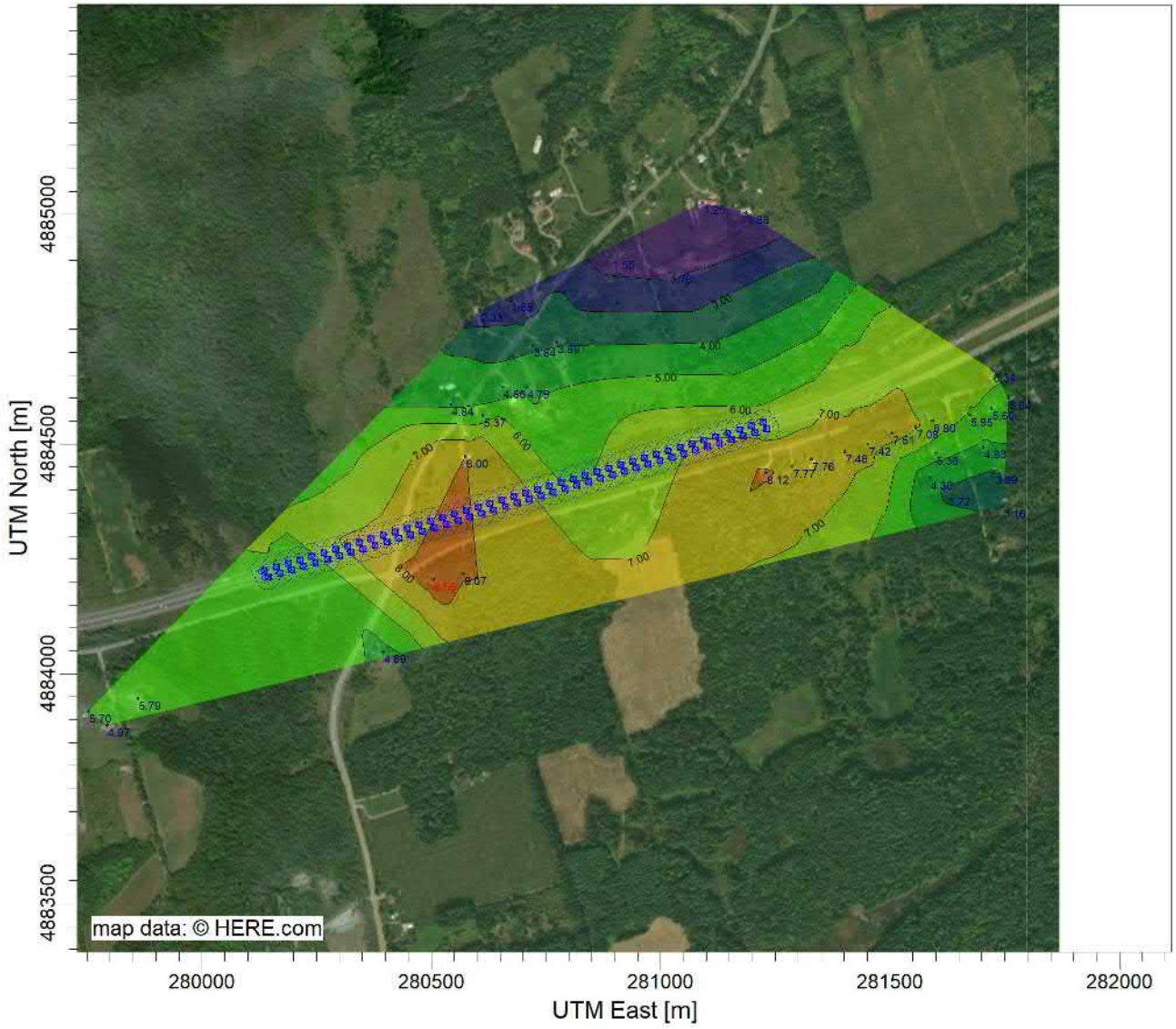
Max: 0.477 [ug/m^3] at (277652.27, 4883494.89)



COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **293**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,000 0 0.5 km	
	MAX: **0.477 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

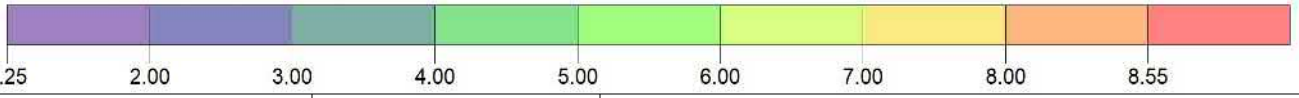
PROJECT TITLE:

Highway 401 Brighton 2022
Section 6 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

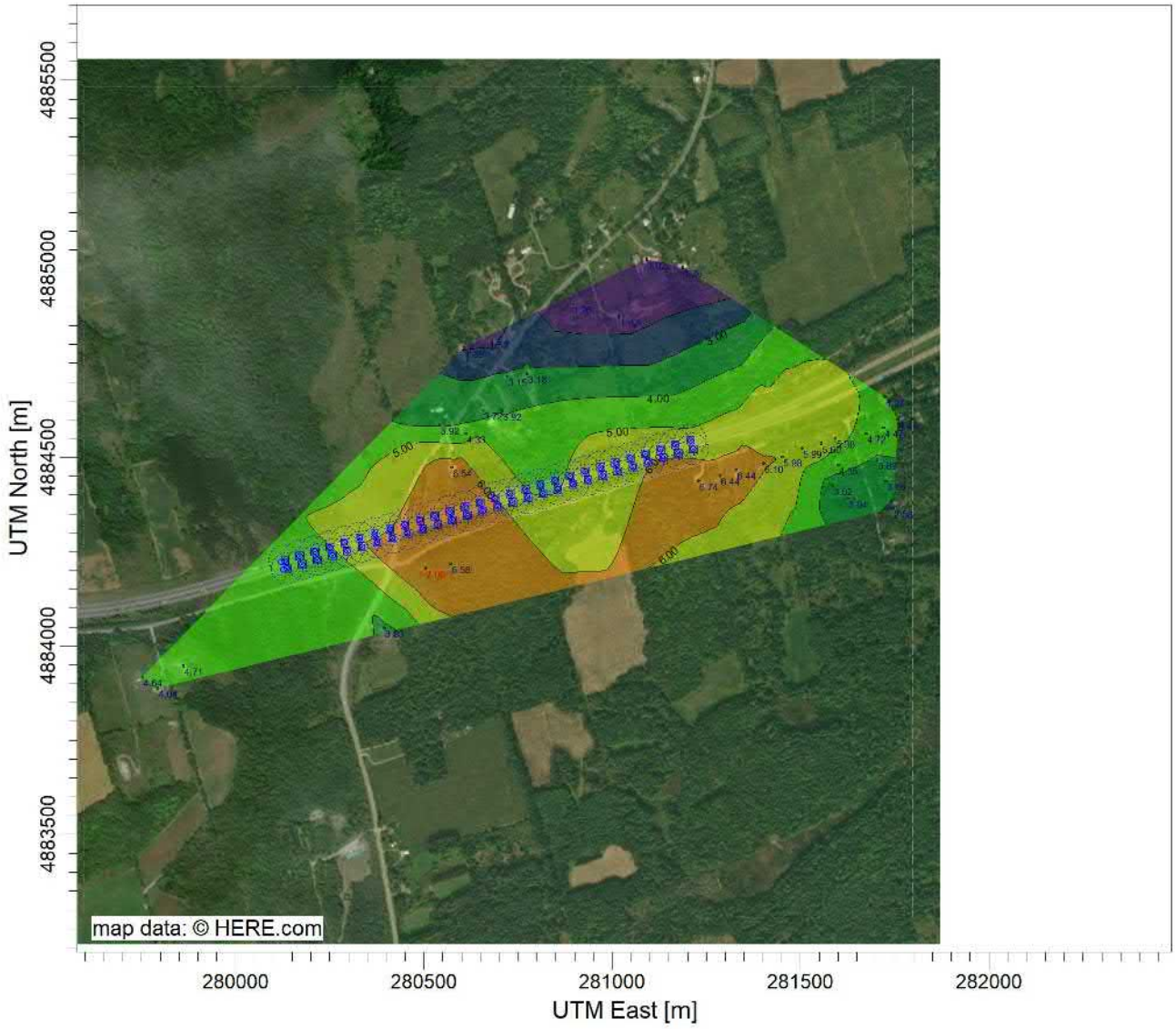
Max: 8.55 [ug/m^3] at (280503.91, 4884205.95)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 (0 — 0.5 km)	
	MAX: **8.55 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 6 - NO2



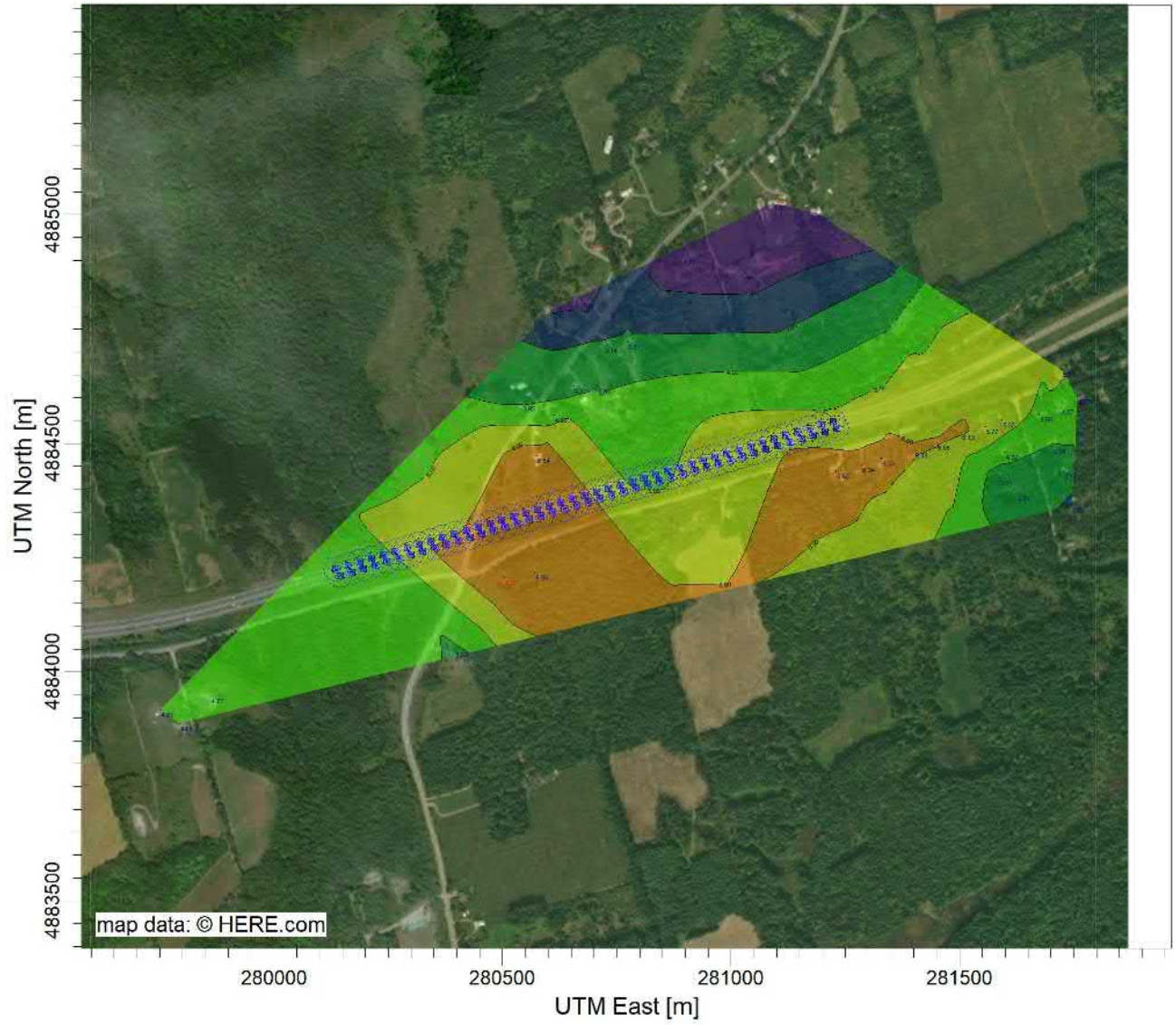
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 7.00 [ug/m^3] at (280503.91, 4884205.95)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,271 0 0.5 km	
	MAX: **7.00 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

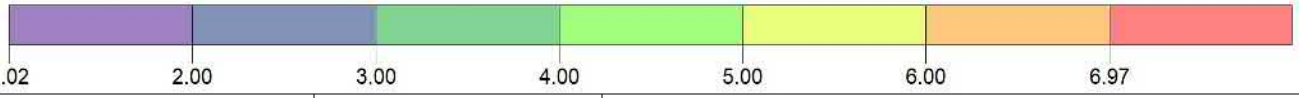
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 6 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

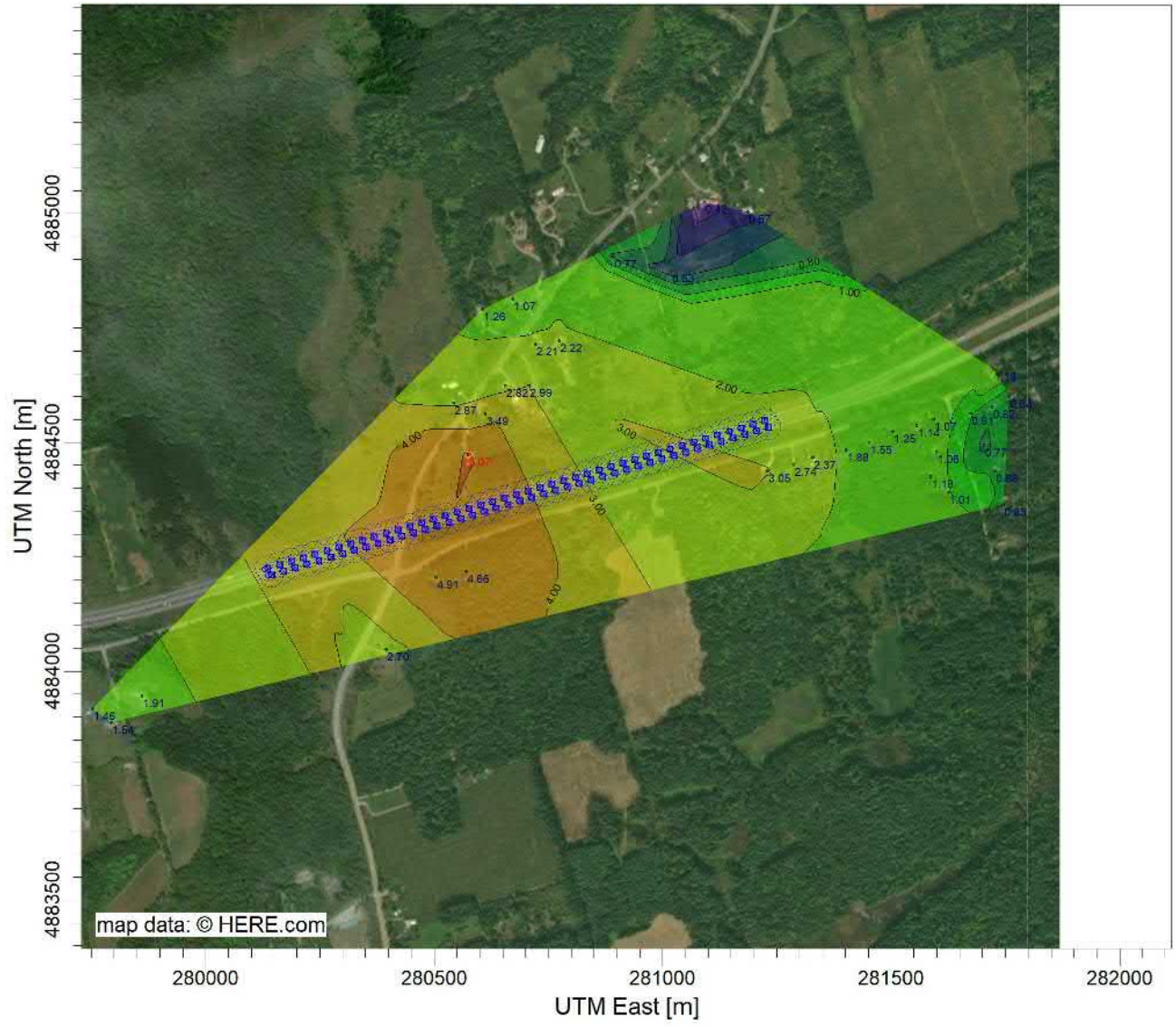
Max: 6.97 [ug/m^3] at (280503.91, 4884205.95)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **6.97 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

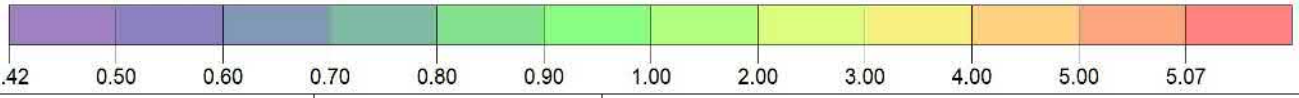
PROJECT TITLE:

Highway 401 Brighton 2022
Section 6 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

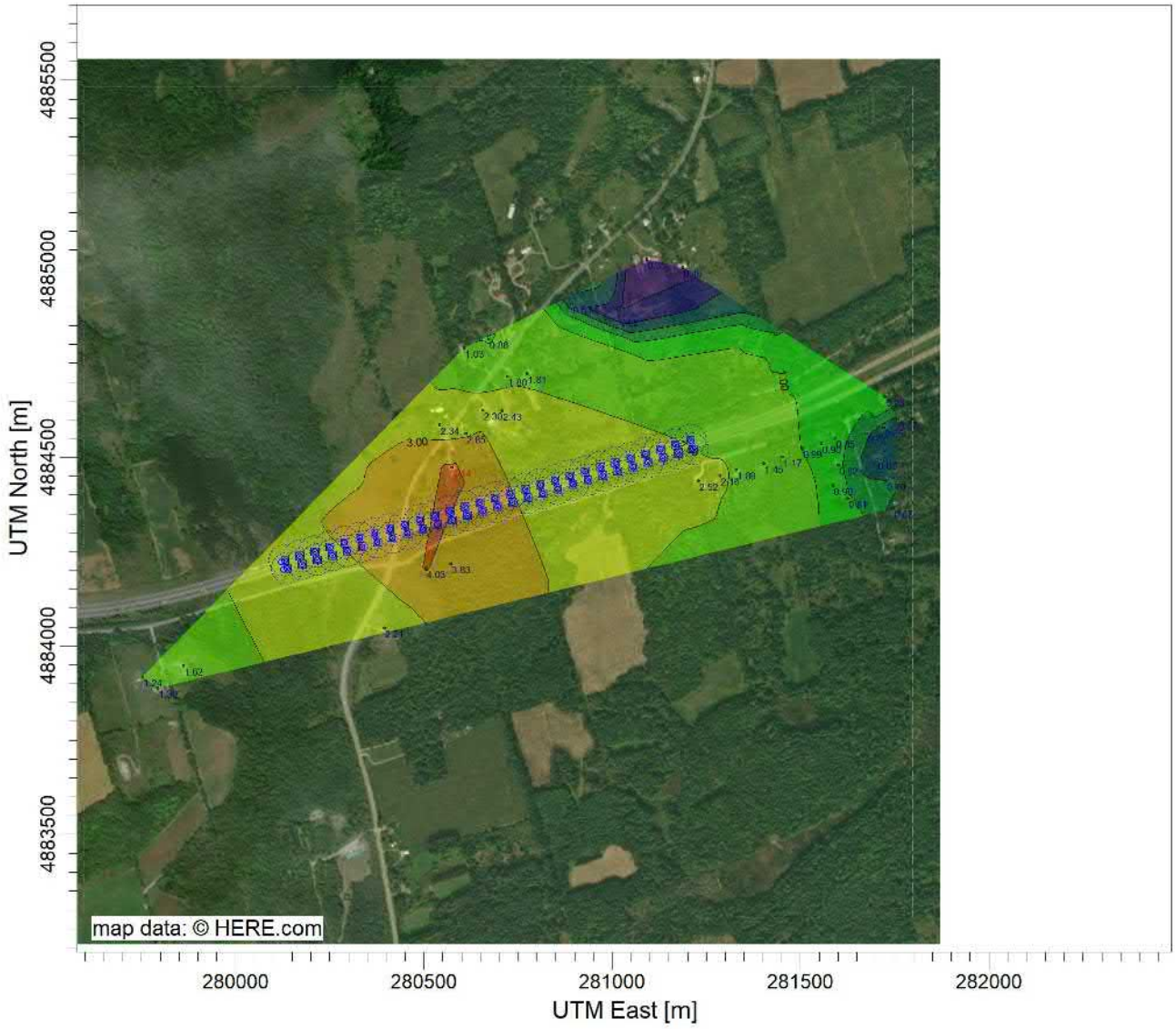
Max: 5.07 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **5.07 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

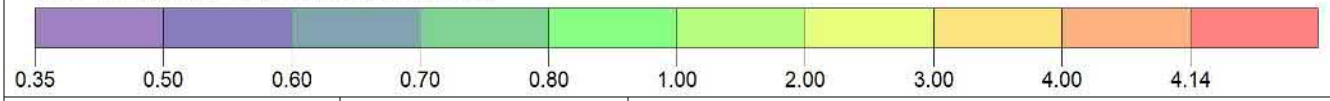
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 6 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

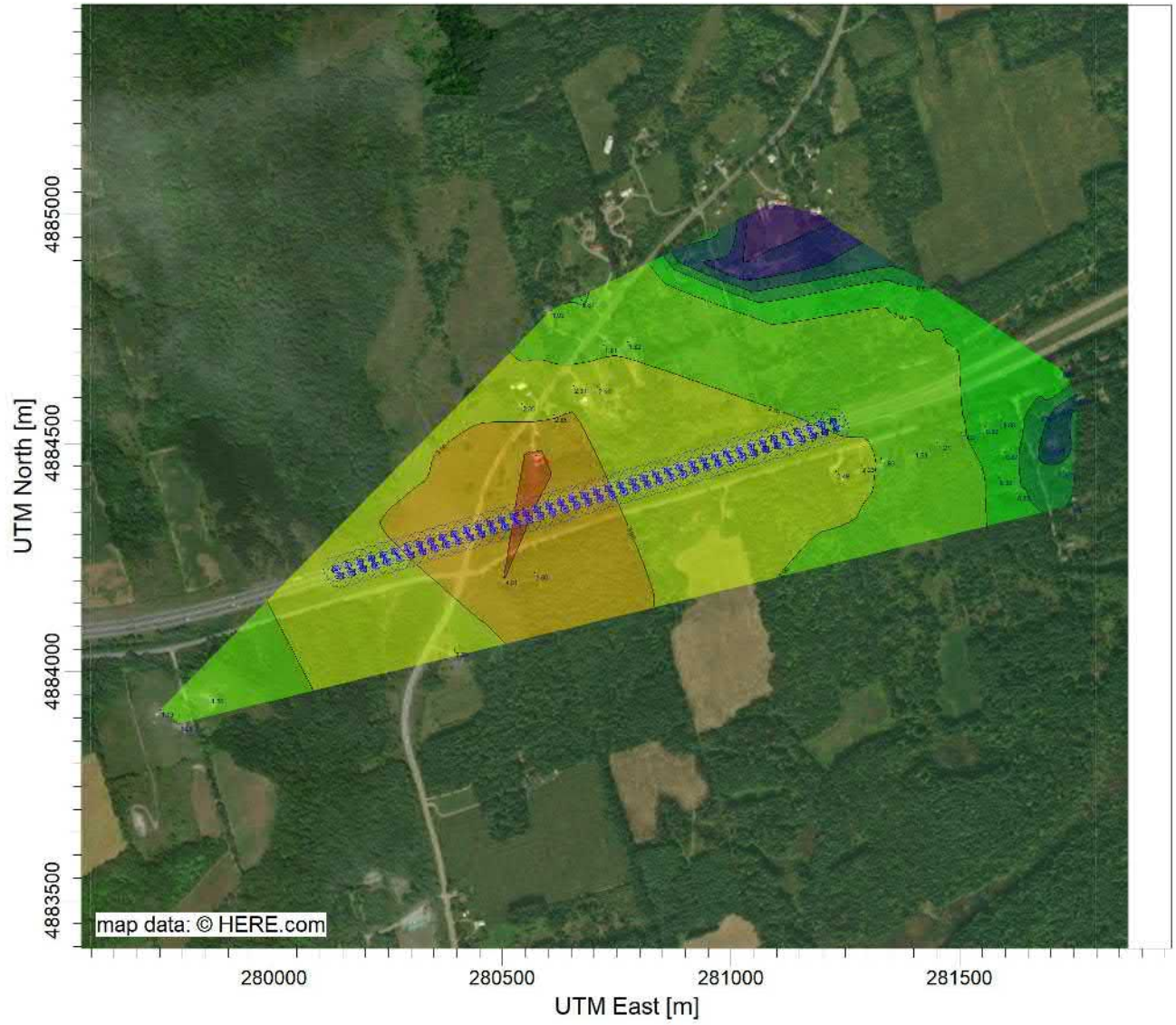
Max: 4.14 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,271 0 0.5 km	
	MAX: **4.14 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

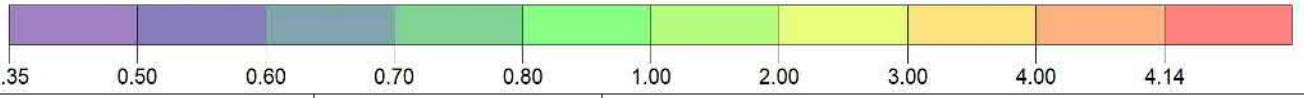
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 6 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

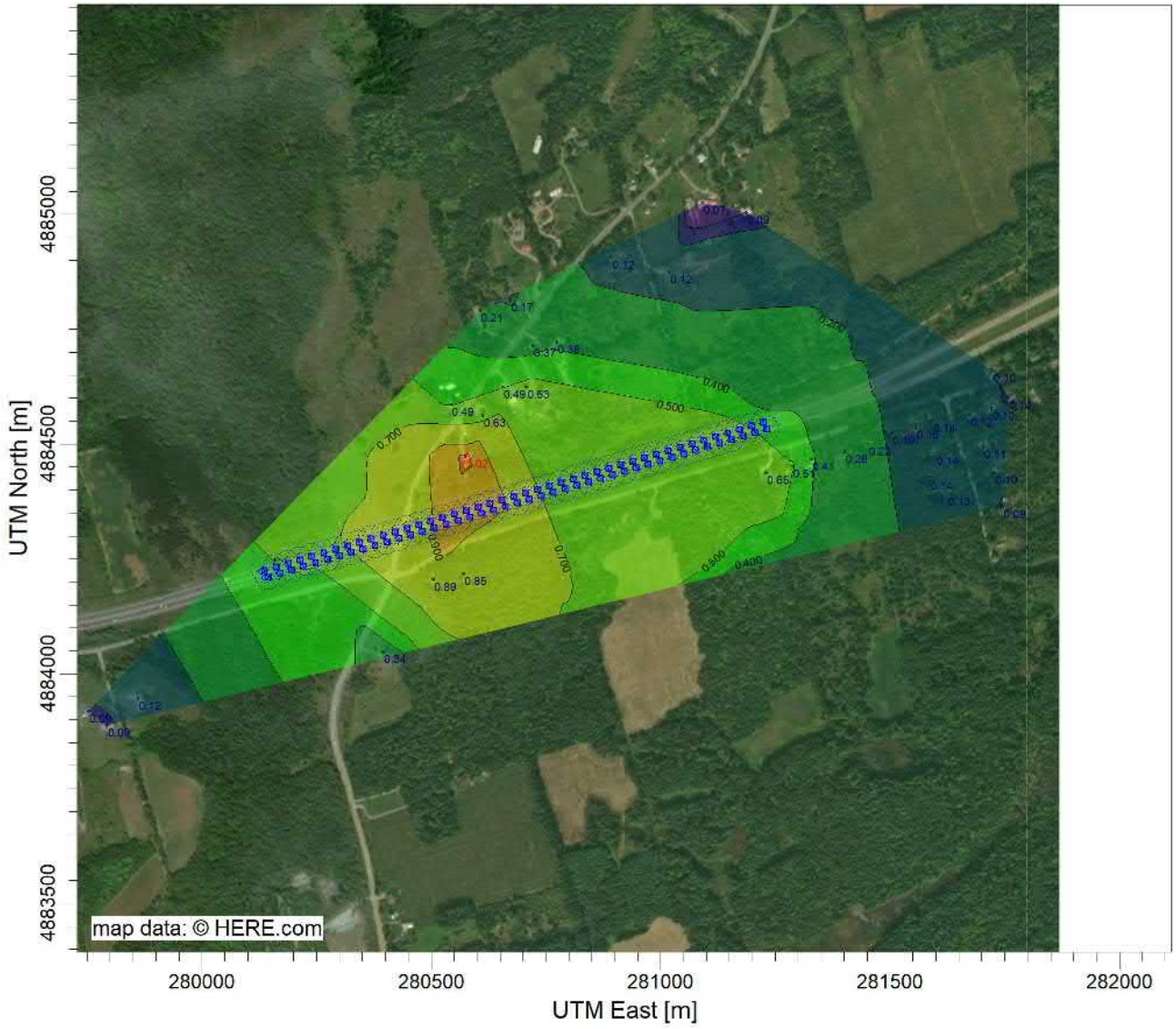
Max: 4.14 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **4.14 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

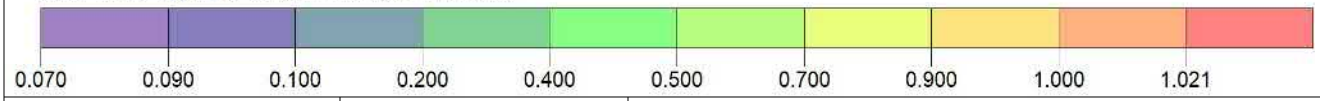
PROJECT TITLE:

Highway 401 Brighton 2022
Section 6 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

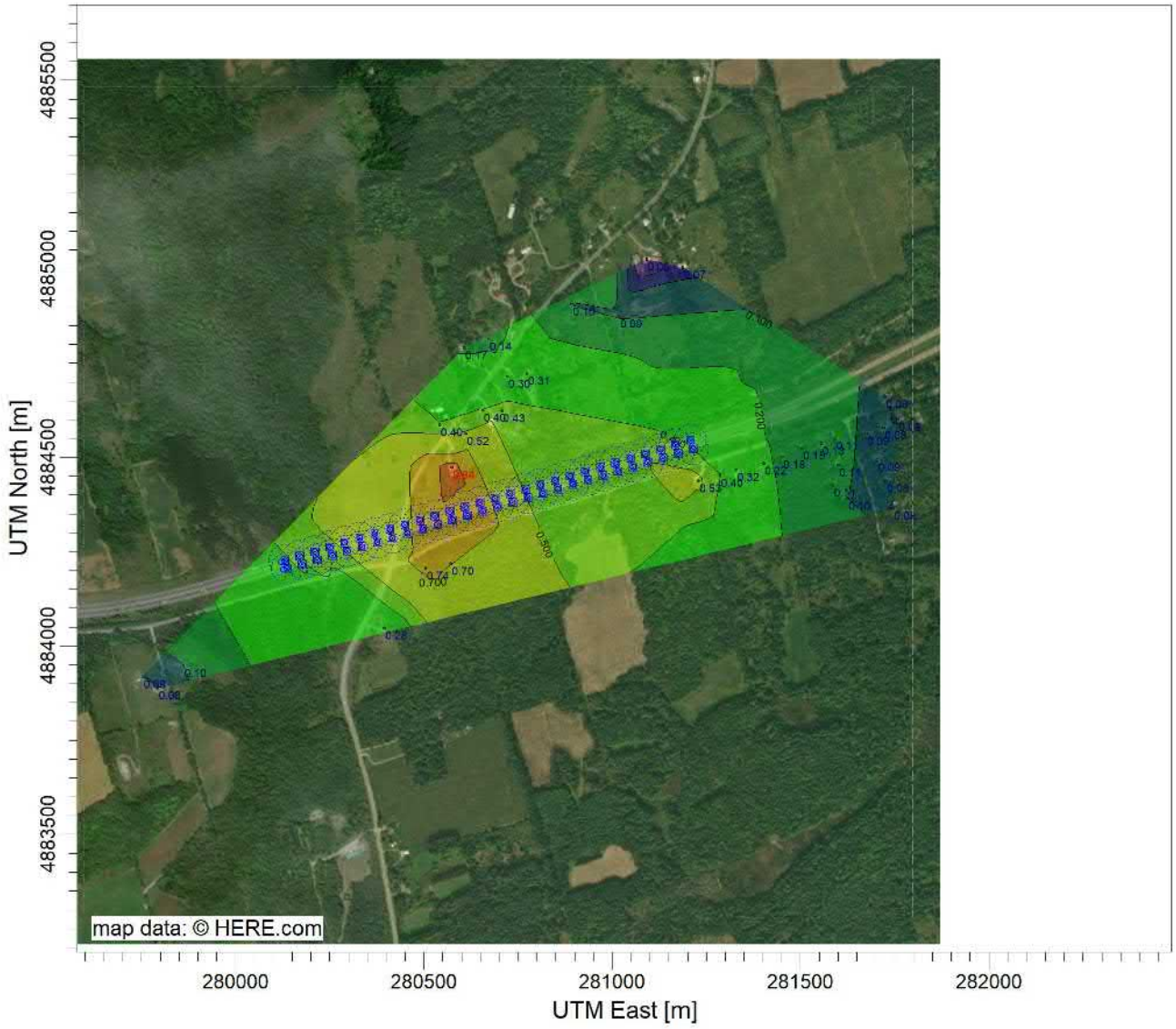
Max: 1.021 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **1.021 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

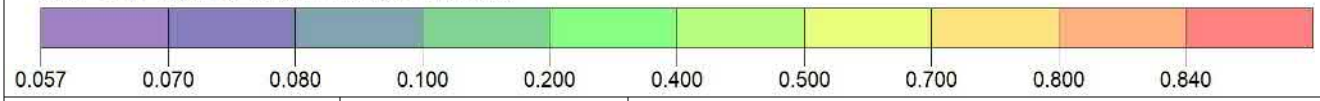
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 6 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

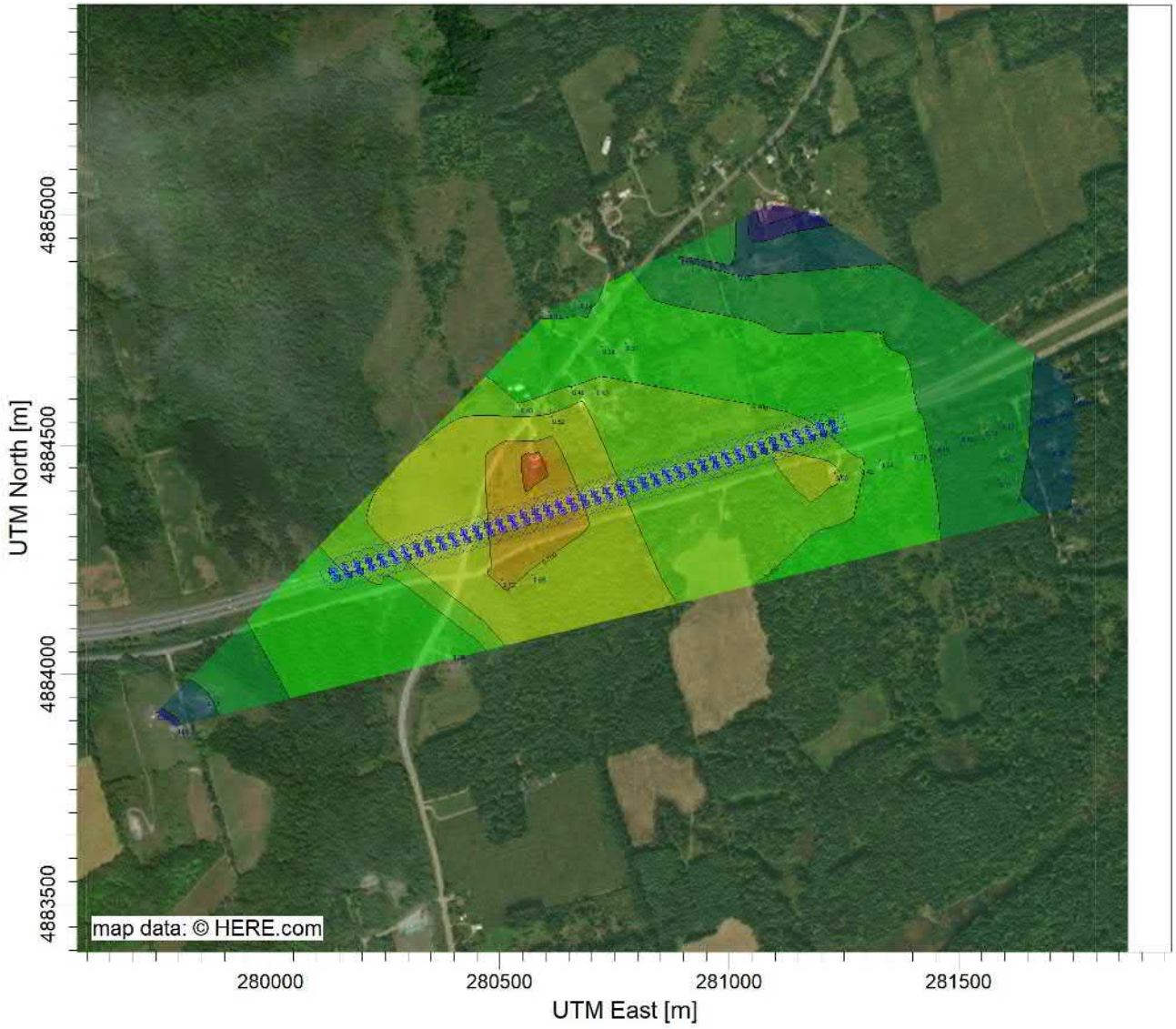
Max: 0.840 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:18,271 0 0.5 km	
	MAX: **0.840 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

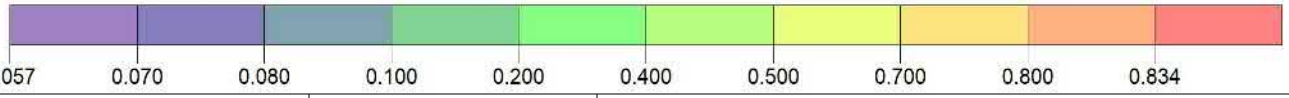
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 6 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

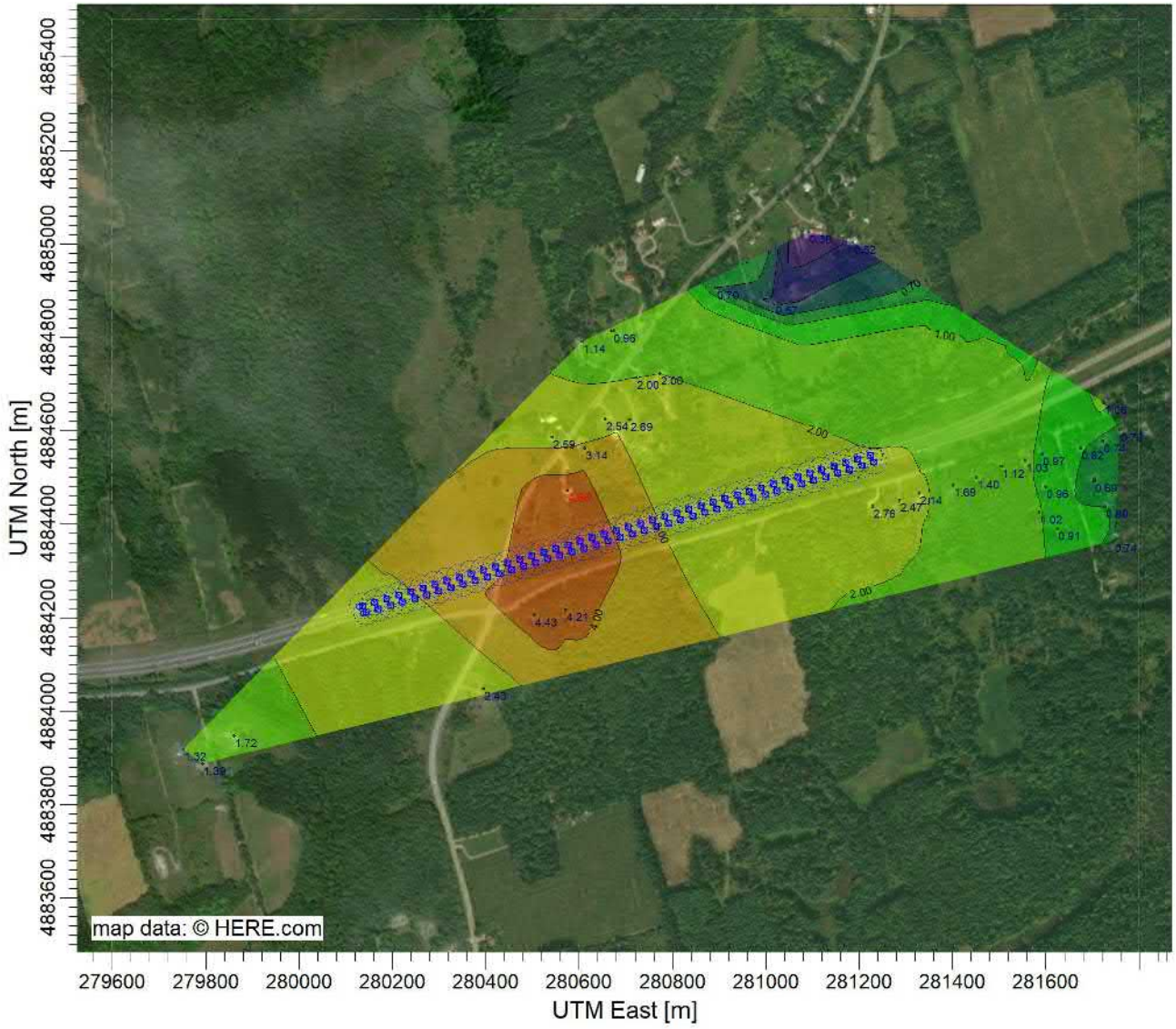
Max: 0.834 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,000 0 0.5 km	
	MAX: **0.834 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 6 - PM2.5



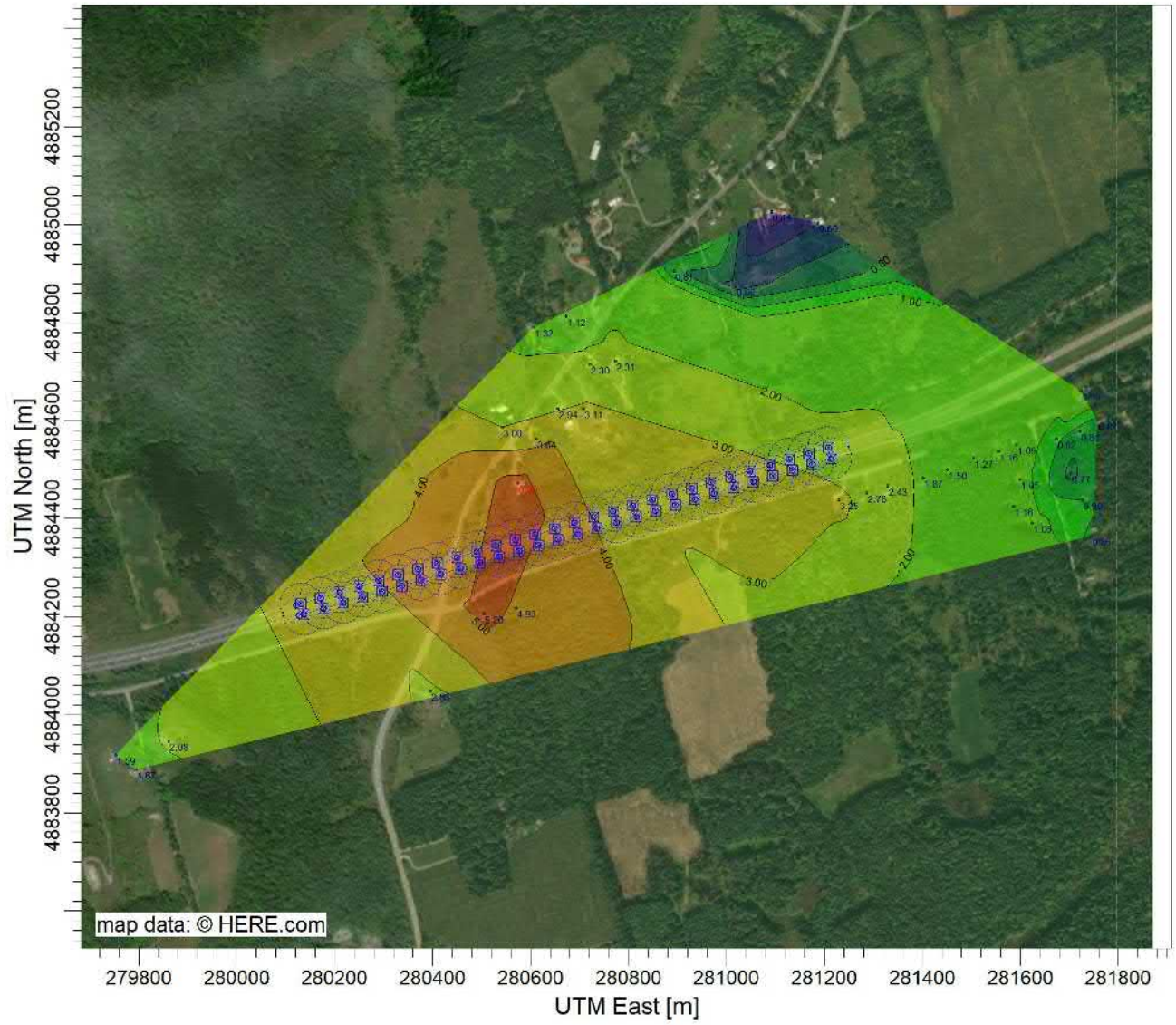
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 4.56 [ug/m^3] at (280574.37, 4884473.10)

COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,744 0 0.5 km	
	MAX: **4.56 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 6 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

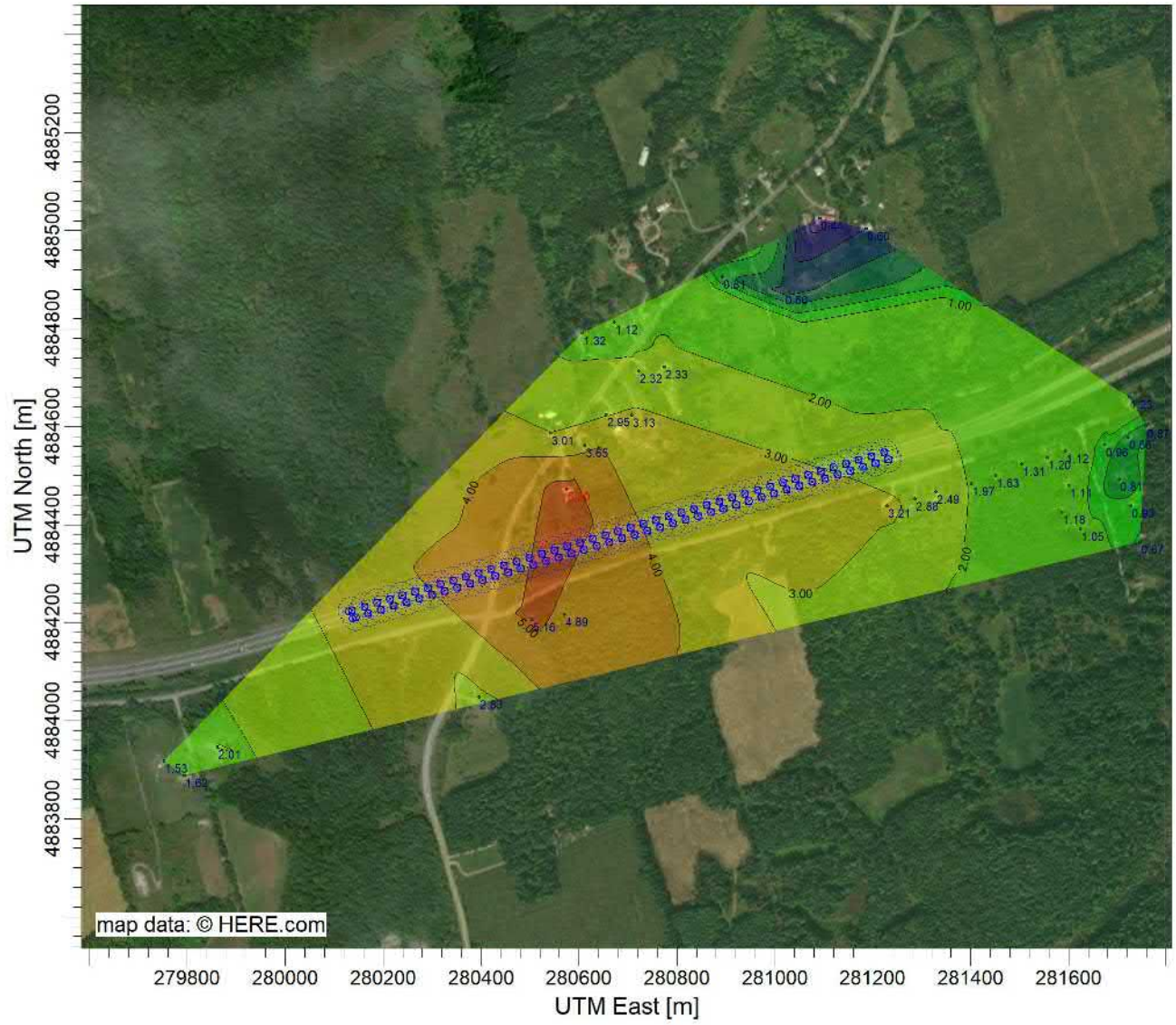
Max: 5.30 [ug/m^3] at (280574.37, 4884473.10)

0.44 0.50 0.60 0.70 0.80 0.90 1.00 2.00 3.00 4.00 5.00 5.30

COMMENTS: PM2.5 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,000 0 0.5 km	
	MAX: **5.30 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 6 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

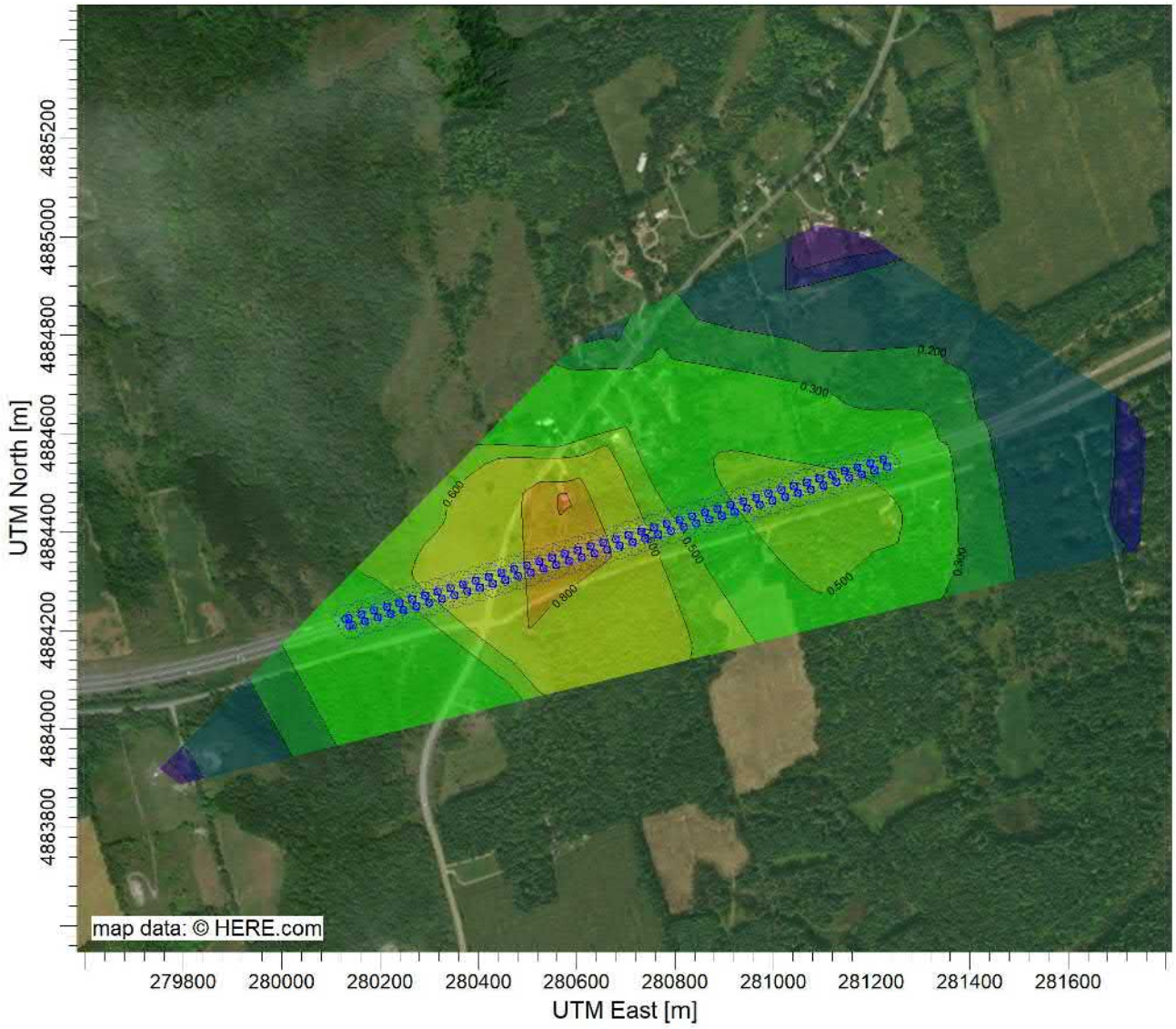
Max: 5.30 [ug/m^3] at (280574.37, 4884473.10)

0.44 0.50 0.60 0.70 0.80 0.90 1.00 2.00 3.00 4.00 5.00 5.30

COMMENTS: PM2.5 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,000 0 0.5 km	
	MAX: **5.30 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

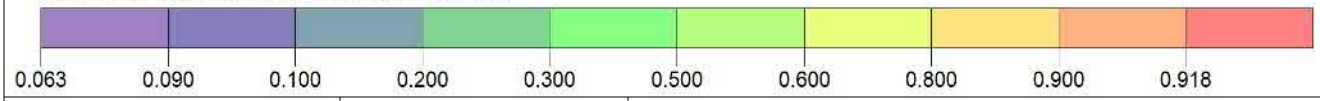
PROJECT TITLE:

Highway 401 Brighton 2022
Section 6 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

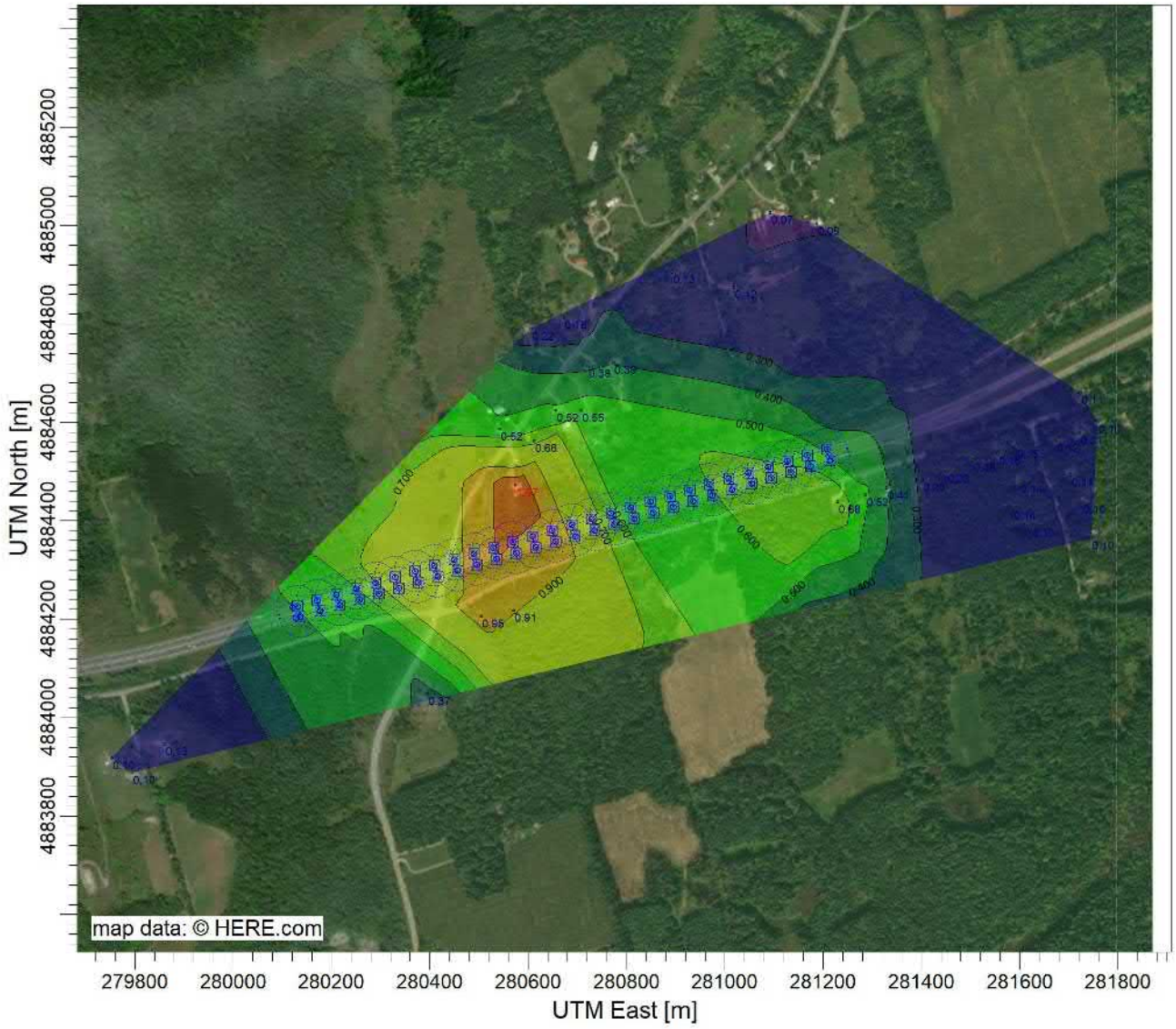
Max: 0.918 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,000 0 0.5 km	
	MAX: **0.918 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

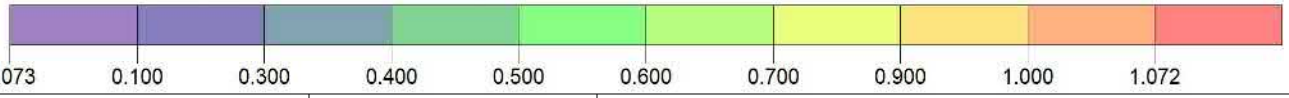
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 6 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

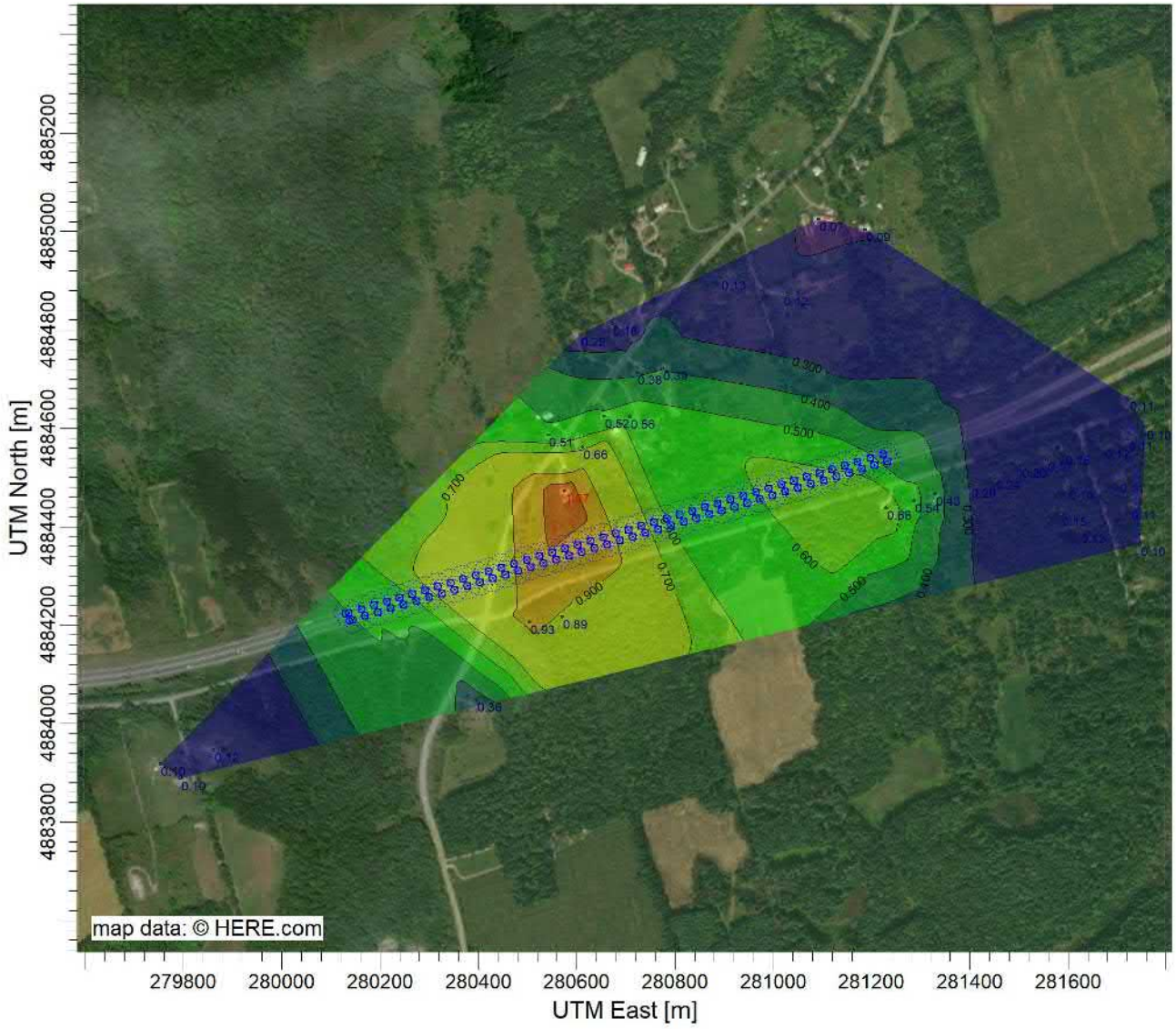
Max: 1.072 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,000 0 0.5 km	
	MAX: **1.072 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

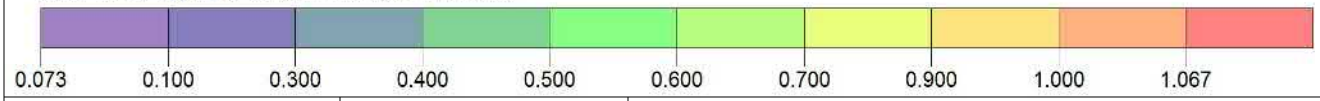
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 6 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

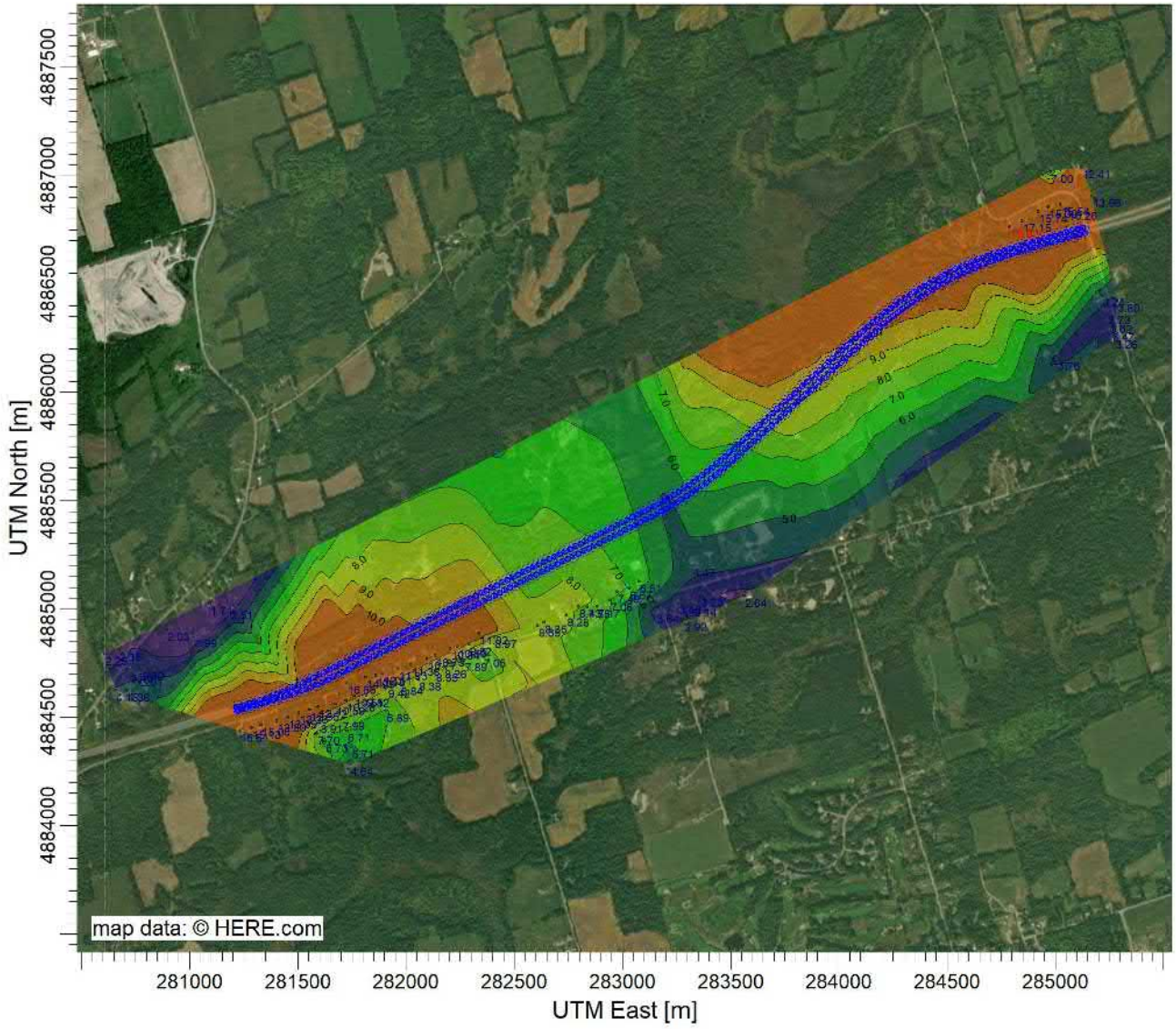
Max: 1.067 [ug/m^3] at (280574.37, 4884473.10)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **37**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:14,000 (0 — 0.5 km)	
	MAX: **1.067 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

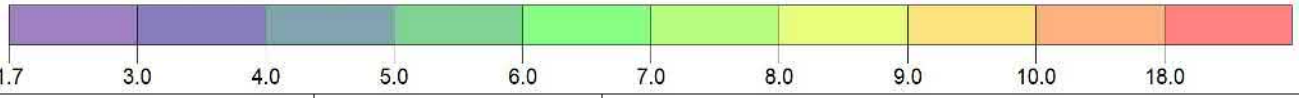
PROJECT TITLE:

Highway 401 Brighton 2022
Section 7 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

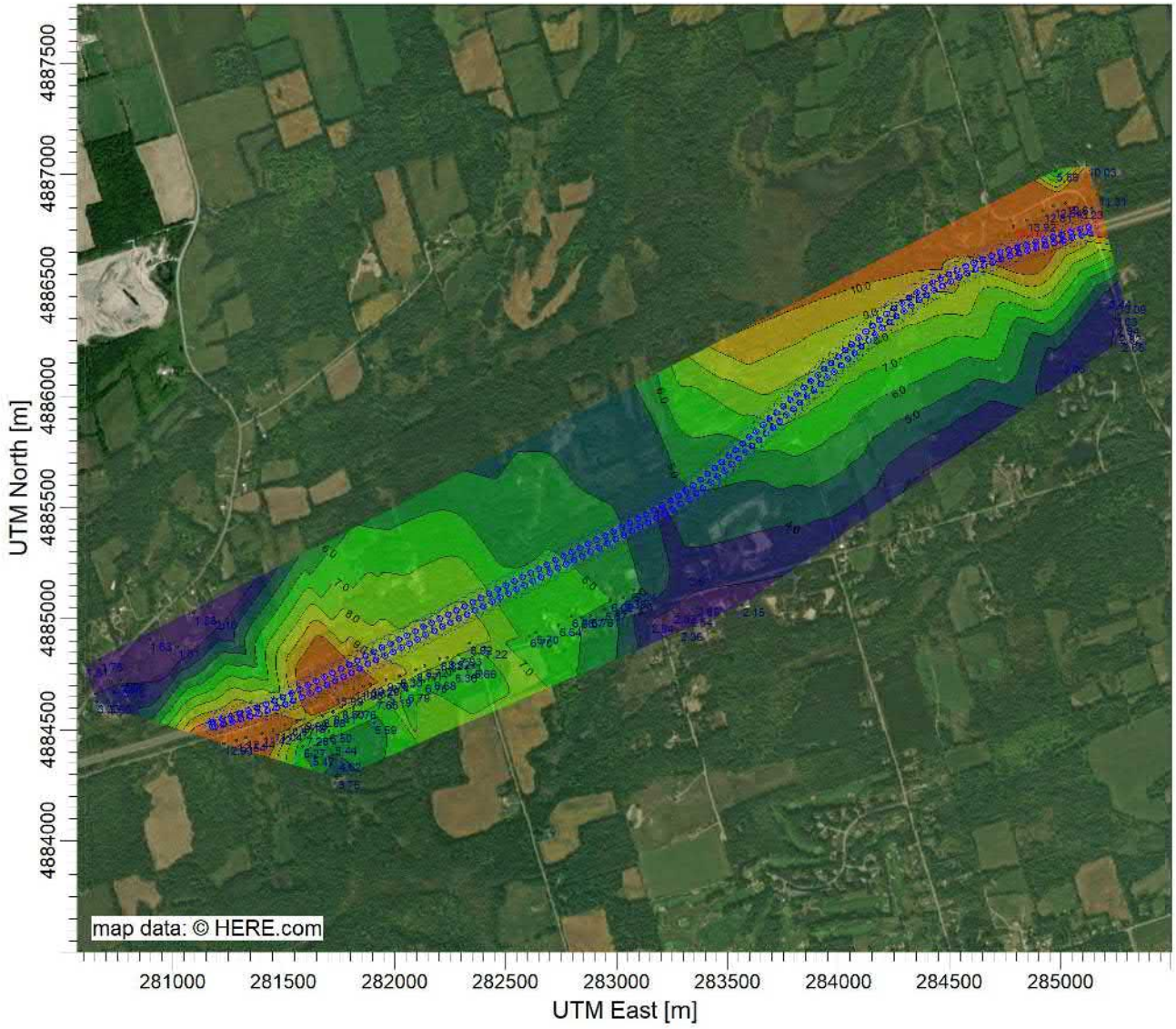
Max: 18.0 [ug/m^3] at (284788.13, 4886764.43)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,800 0 1 km	
	MAX: **18.0 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 7 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

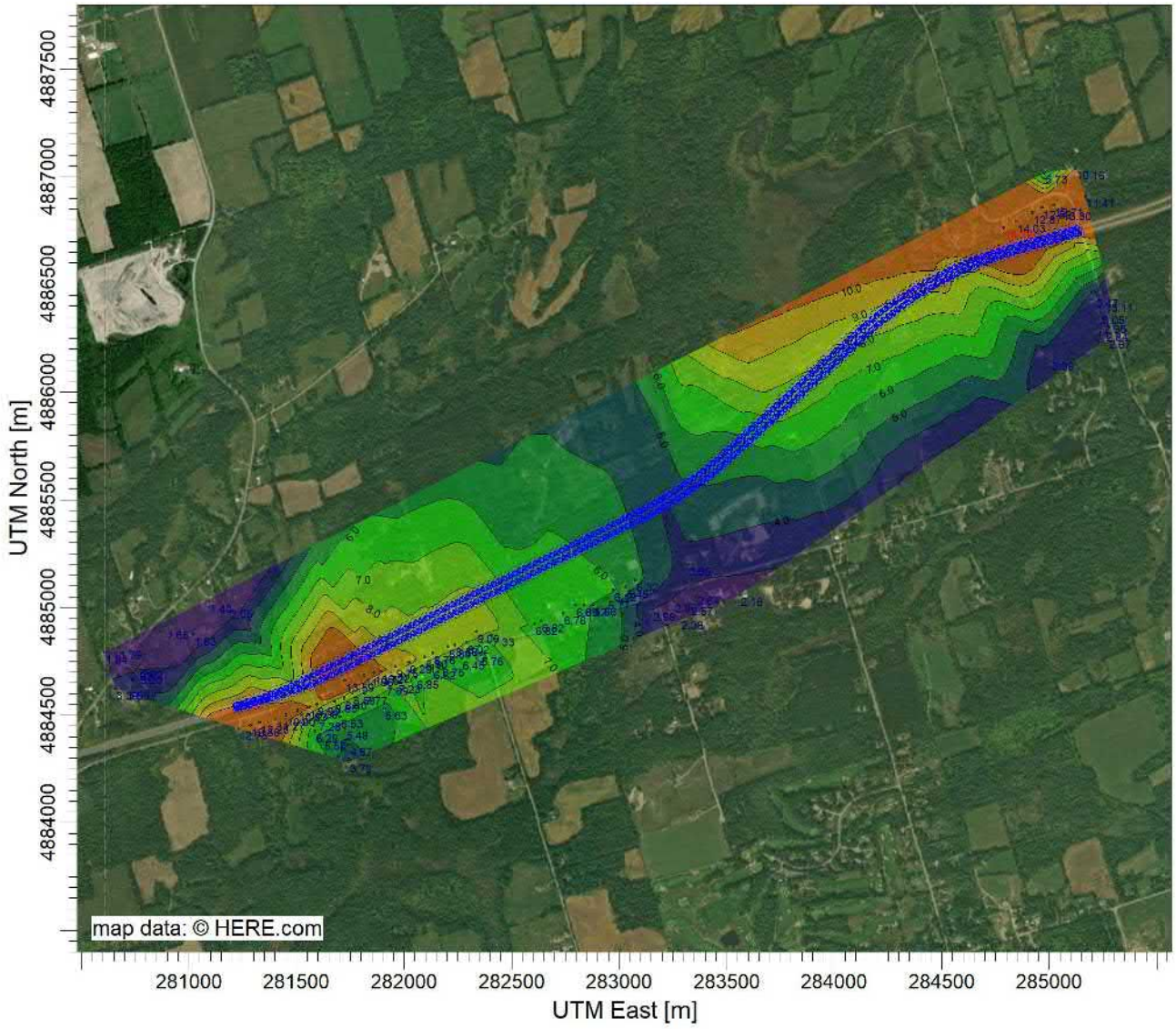
Max: 14.7 [ug/m^3] at (284788.13, 4886764.43)

1.4 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 14.7

COMMENTS: NO2 1-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,000 0 1 km	
	MAX: **14.7 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

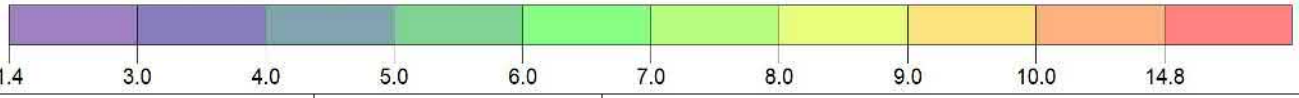
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 7 - NO2



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

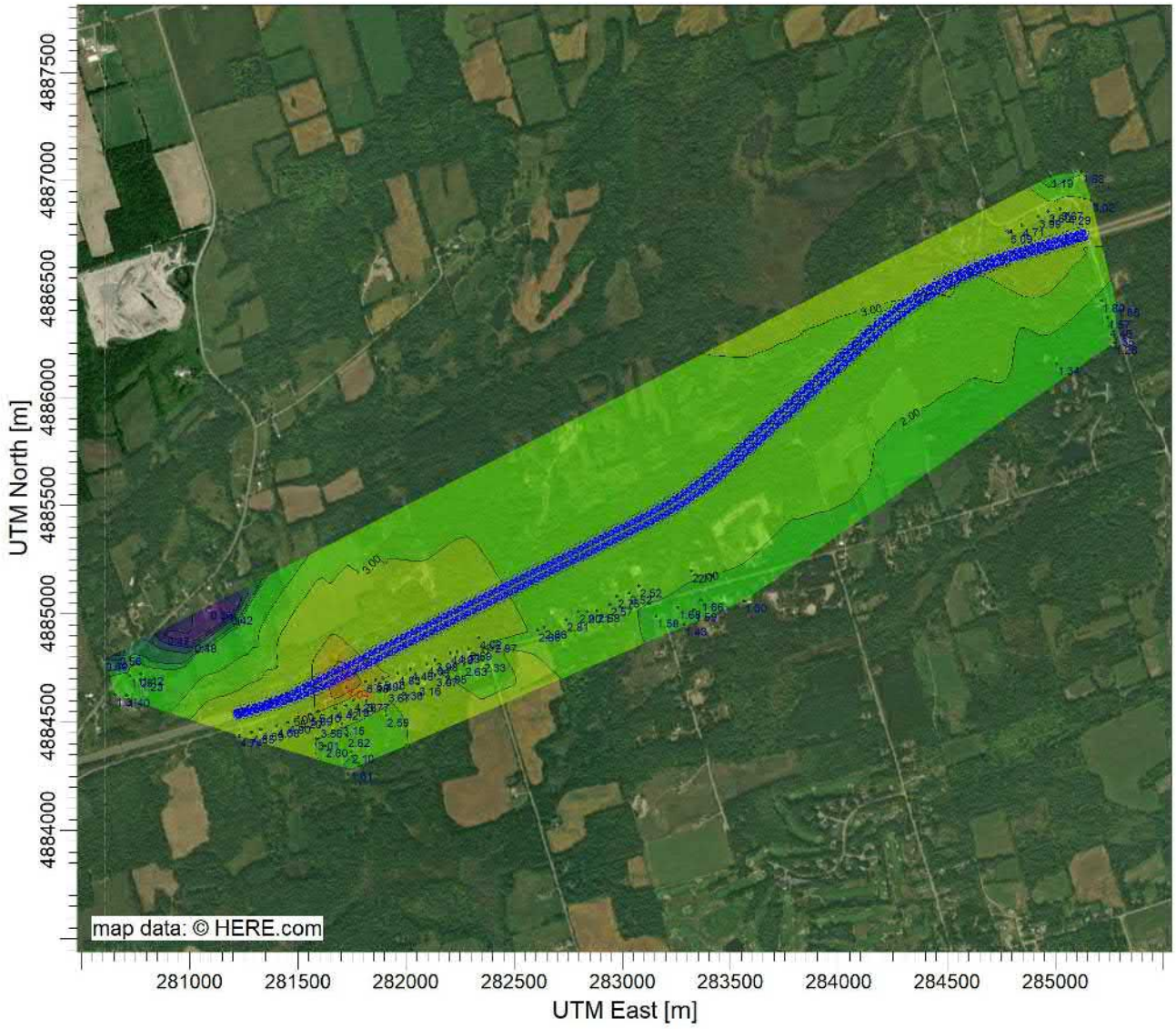
Max: 14.8 [ug/m^3] at (284788.13, 4886764.43)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 1-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,995 0 1 km	
	MAX: **14.8 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 7 - NO2



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

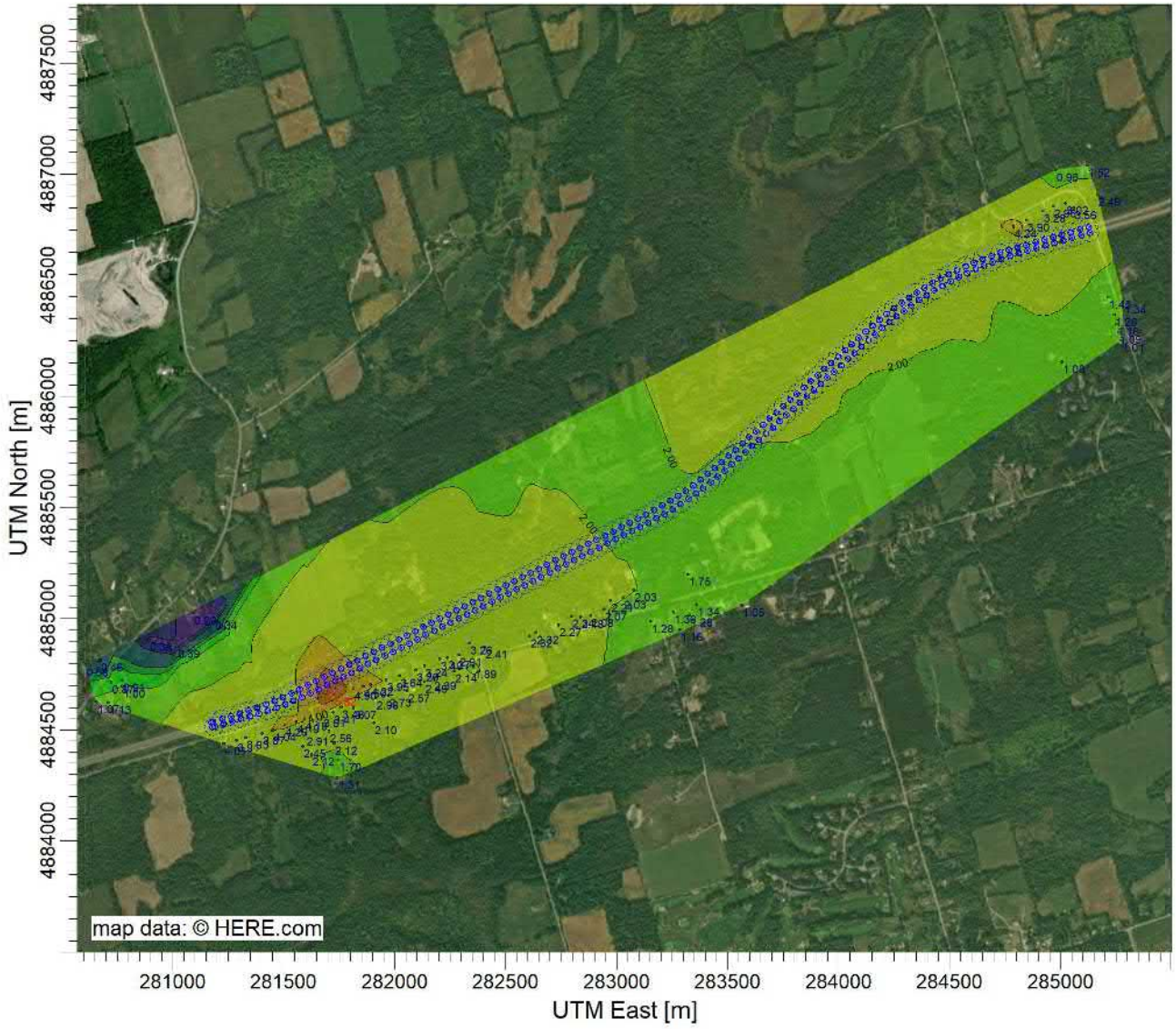
Max: 7.04 [ug/m^3] at (281723.71, 4884660.45)

0.36 0.50 0.60 0.70 0.90 1.00 2.00 3.00 5.00 6.00 7.00 7.04

COMMENTS: NO2 24-hr	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,802 0 1 km	
	MAX: **7.04 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 7 - NO2



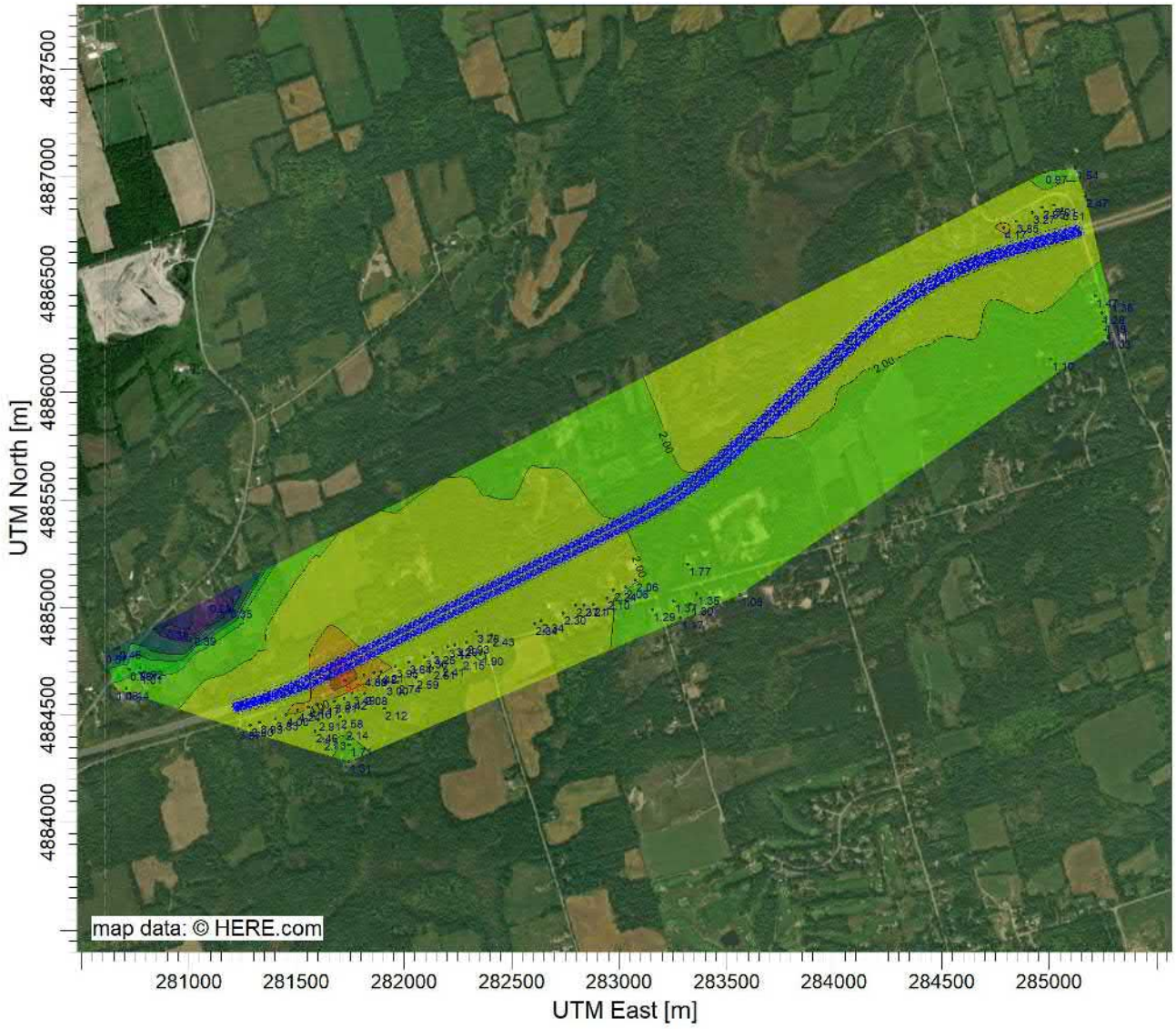
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.82 [ug/m^3] at (281723.71, 4884660.45)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,000 0 1 km	
	MAX: **5.82 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 7 - NO2



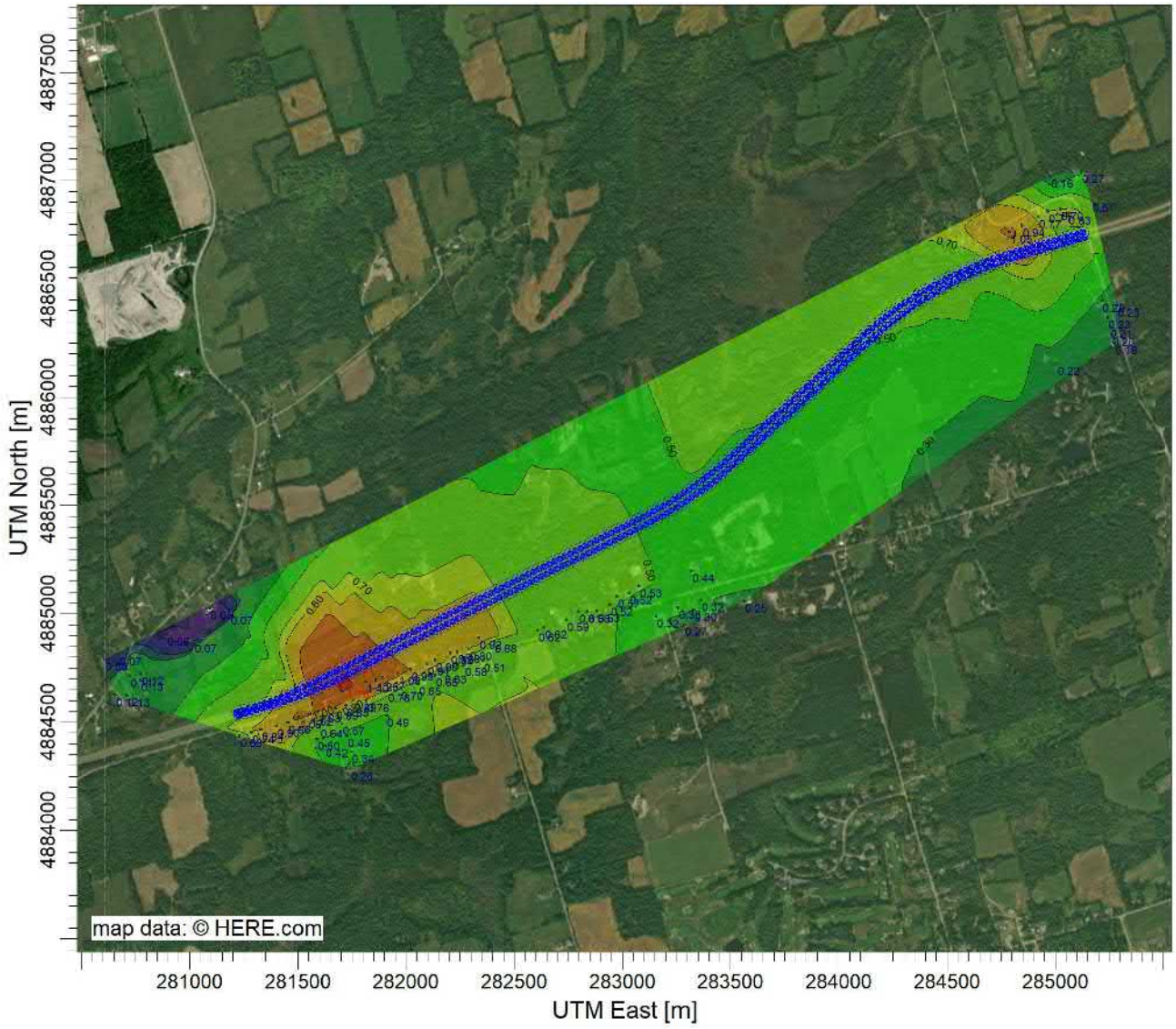
PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 5.75 [ug/m^3] at (281723.71, 4884660.45)

COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 24-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,995 0 1 km	
	MAX: **5.75 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

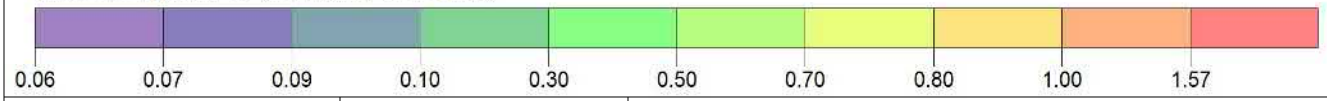
PROJECT TITLE:

Highway 401 Brighton 2022
Section 7 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

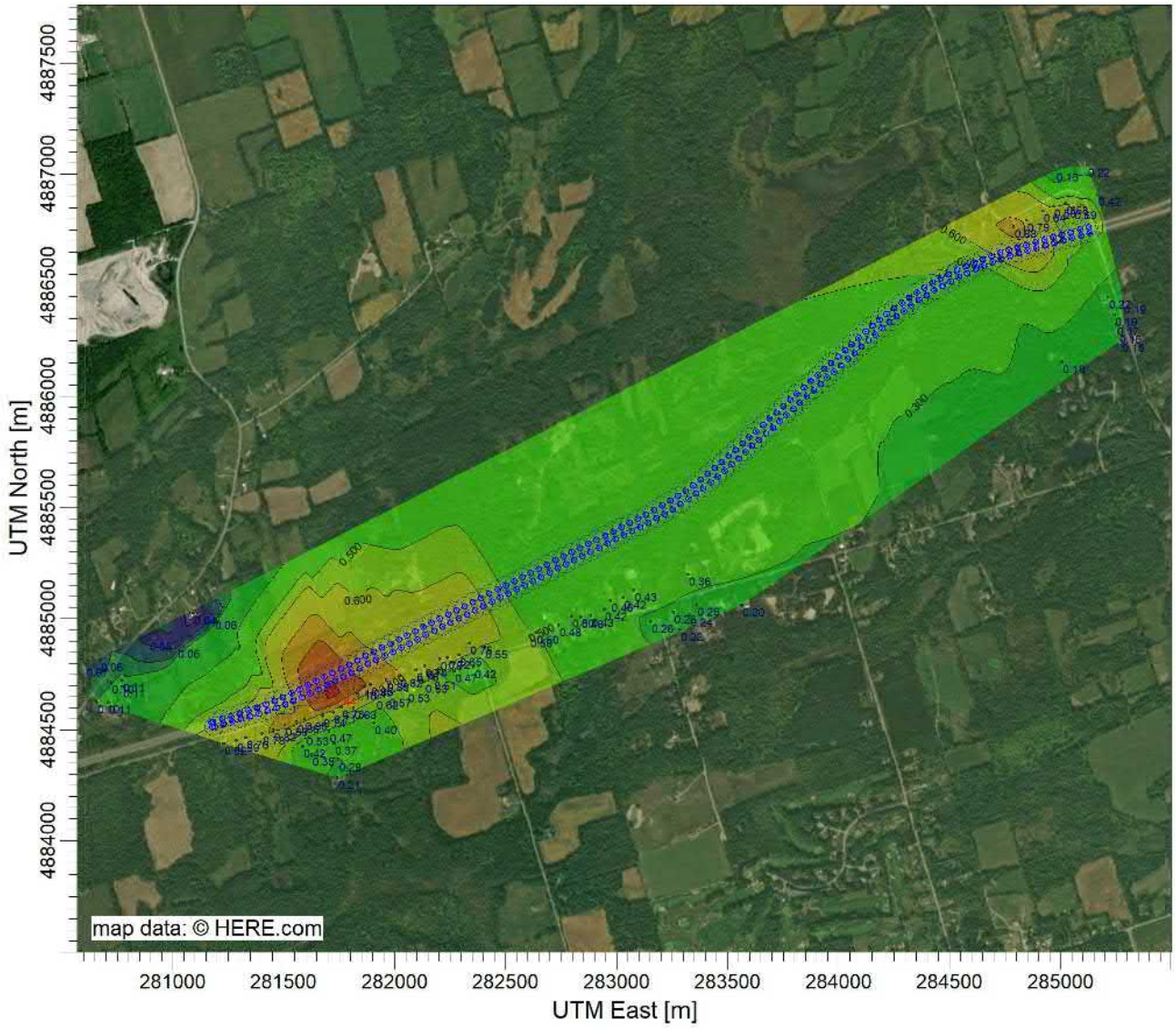
Max: 1.70 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,802 (0 — 1 km)	
	MAX: **1.70 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

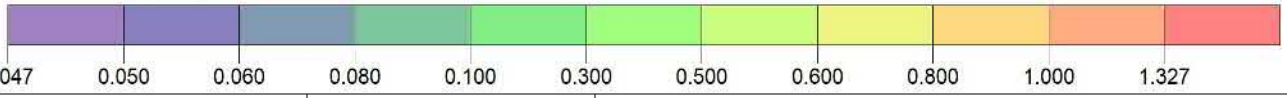
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 7 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

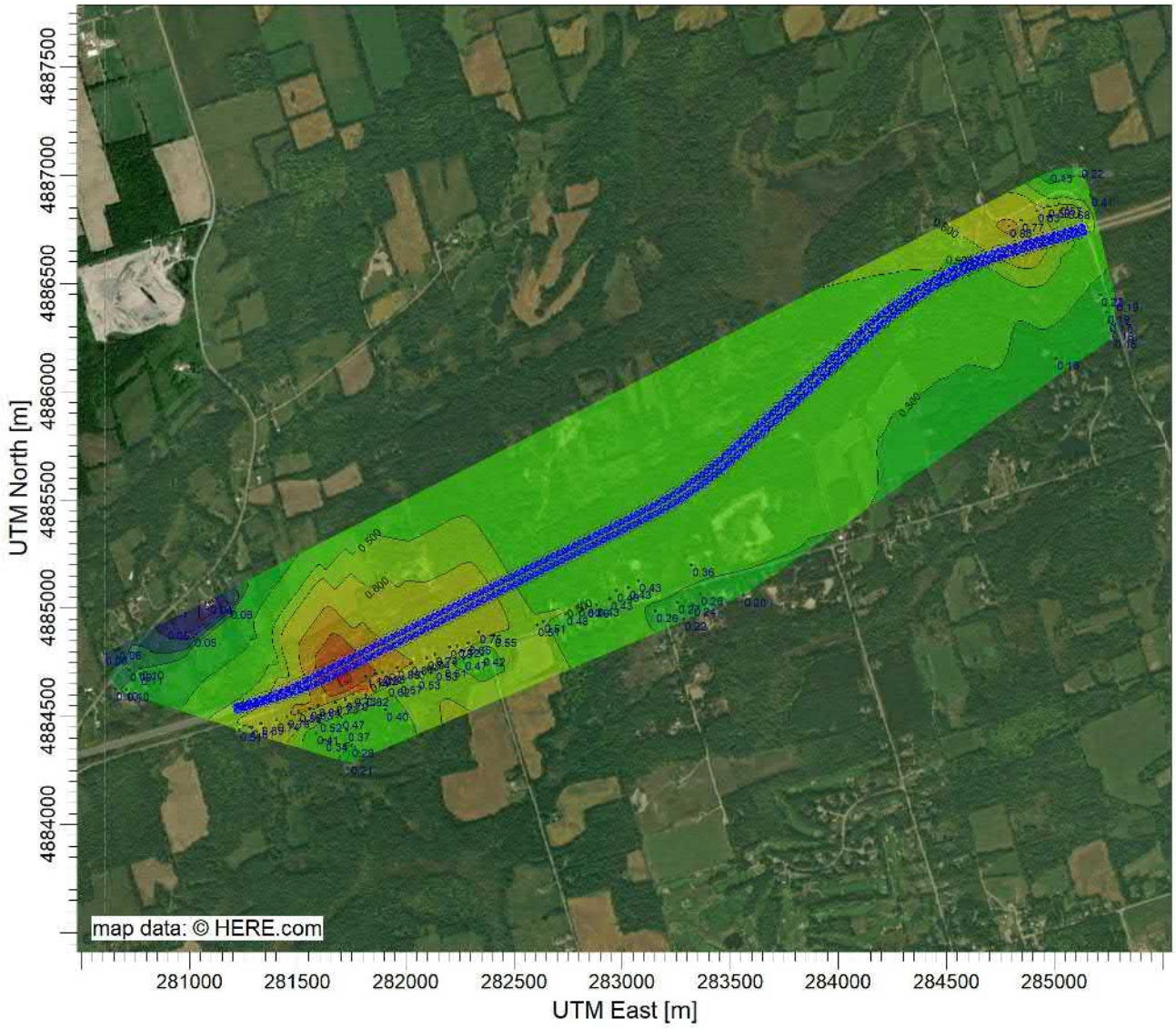
Max: 1.438 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,000 0 1 km	
	MAX: **1.438 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

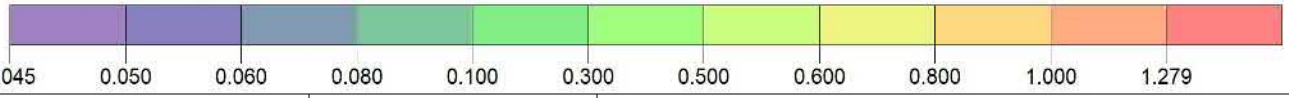
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 7 - NO2



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

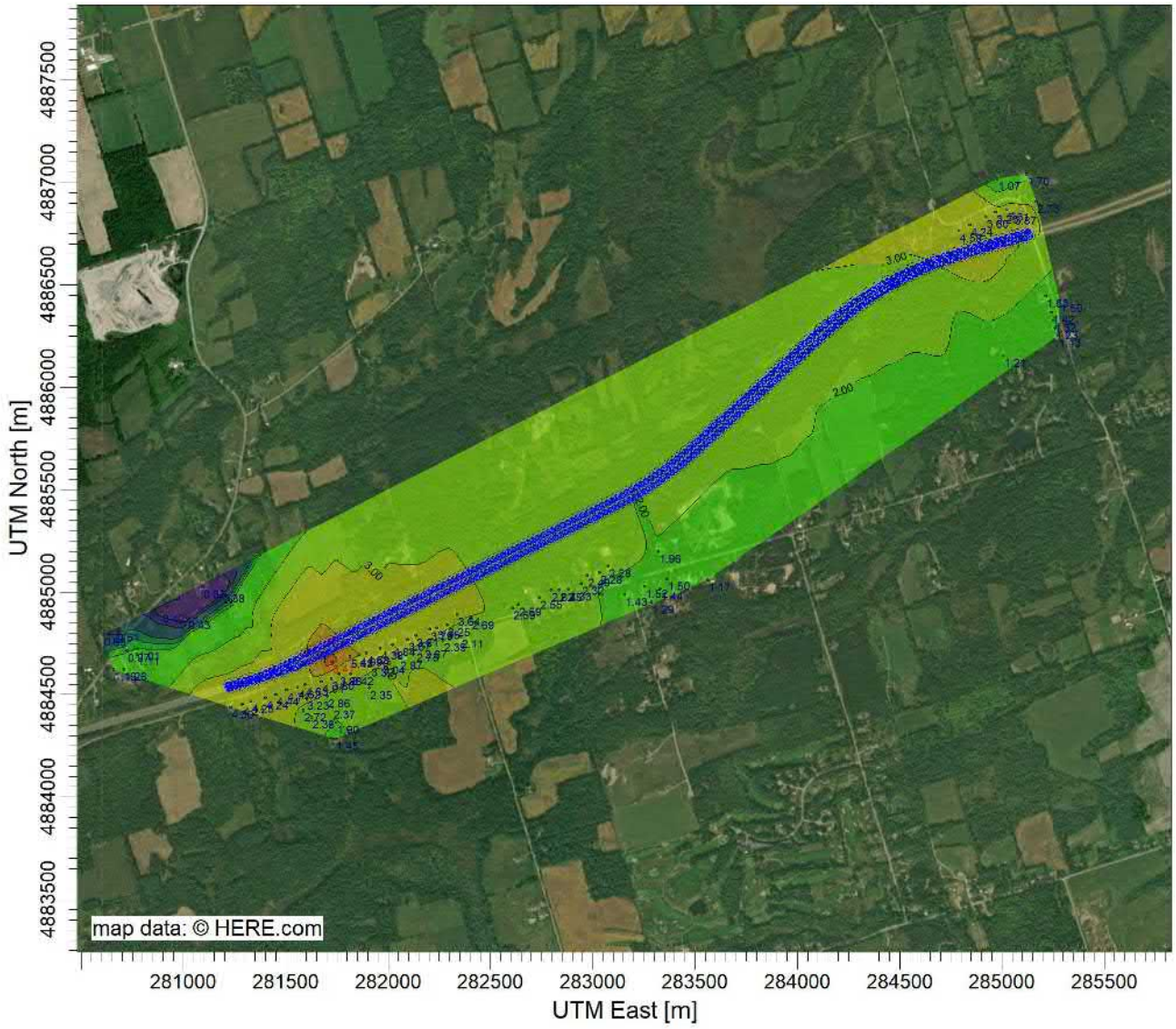
Max: 1.386 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
NO2 Annual	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:31,824 0 1 km	
	MAX: **1.386 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

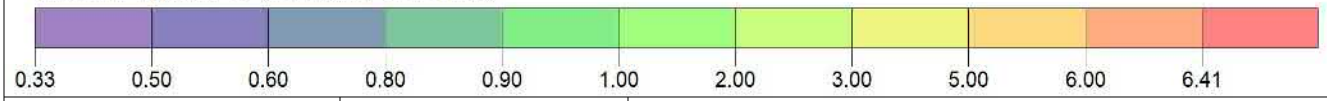
PROJECT TITLE:

Highway 401 Brighton 2022
Section 7 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

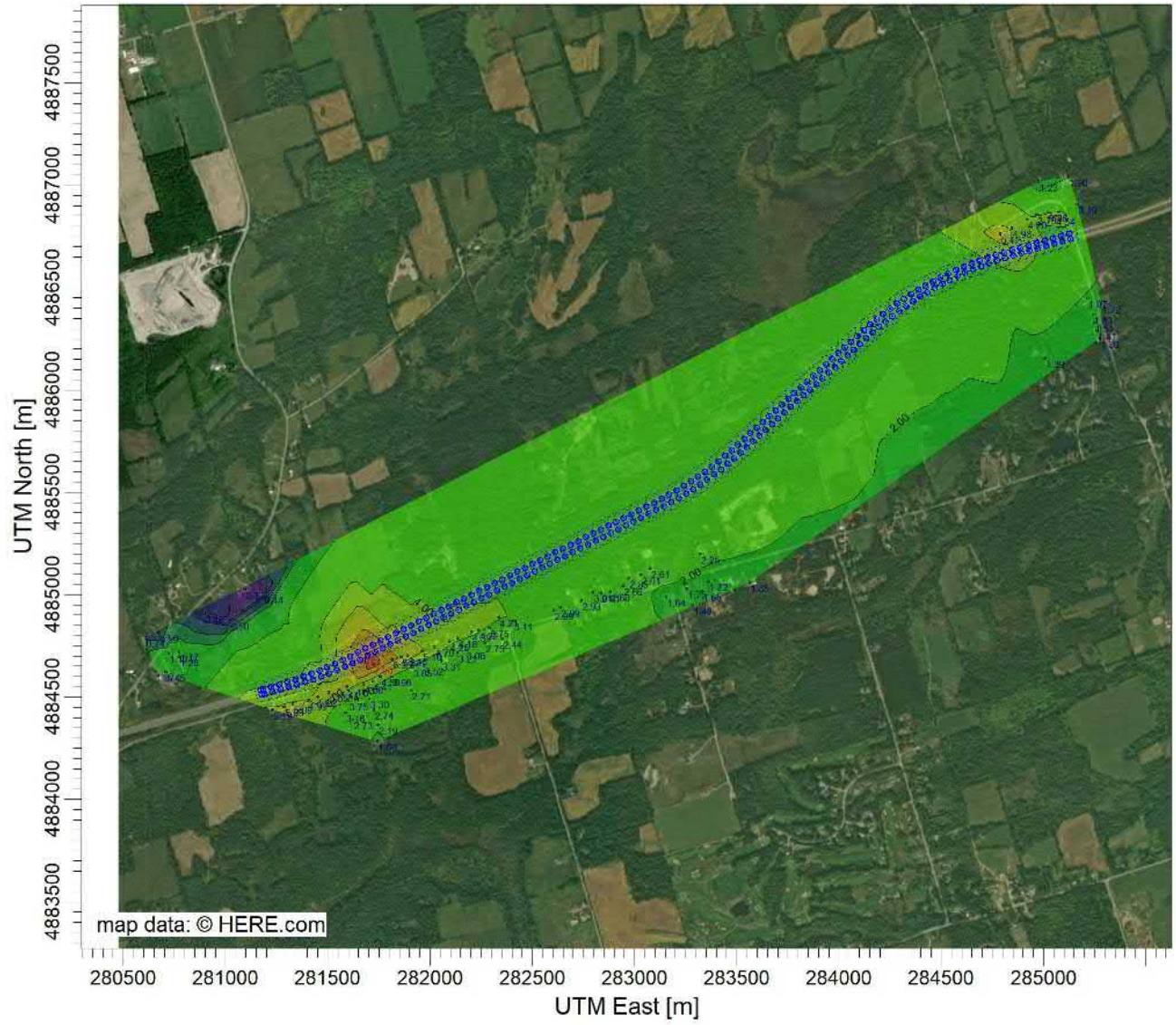
Max: 6.41 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:33,635 0 1 km	
	MAX: **6.41 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

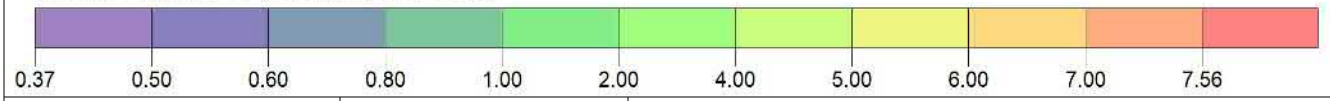
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 7 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

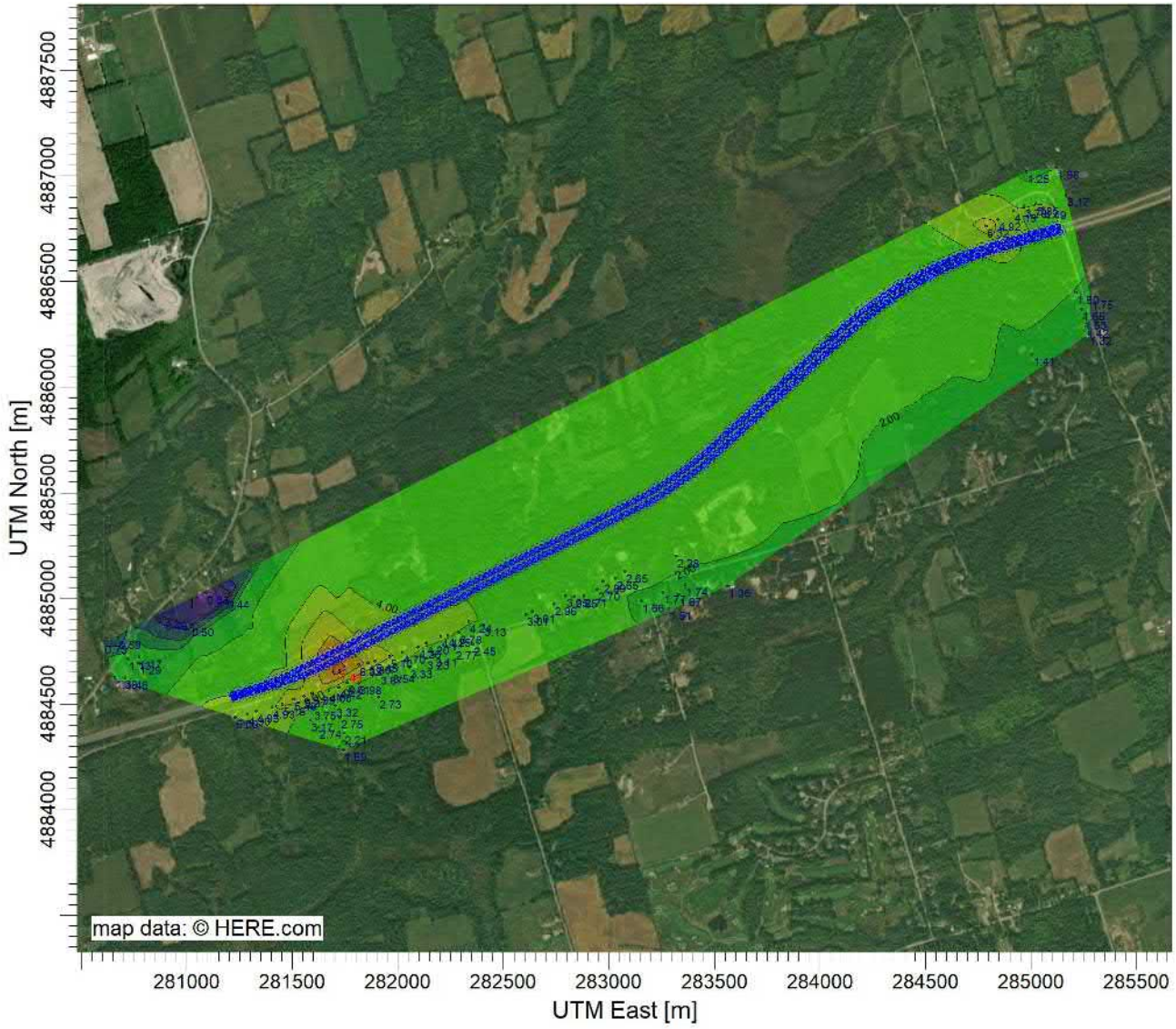
Max: 7.56 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:33,525 0 1 km	
	MAX: **7.56 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

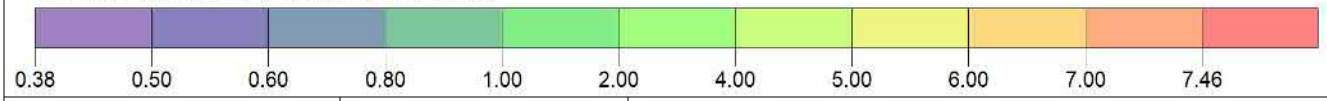
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 7 - PM2.5



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

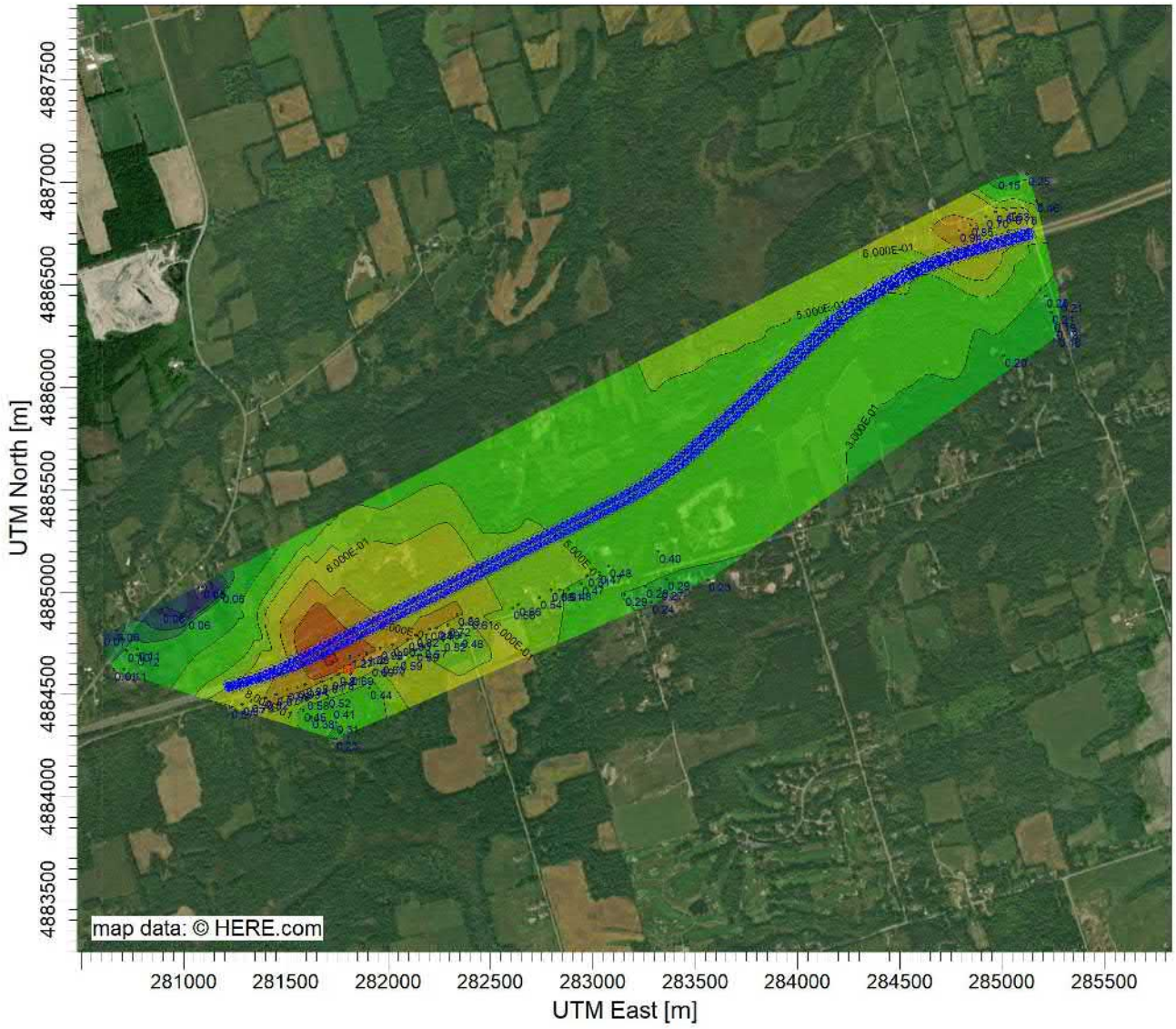
Max: 7.46 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 24-hr	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:32,614 0 1 km	
	MAX: **7.46 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

PROJECT TITLE:

Highway 401 Brighton 2022
Section 7 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

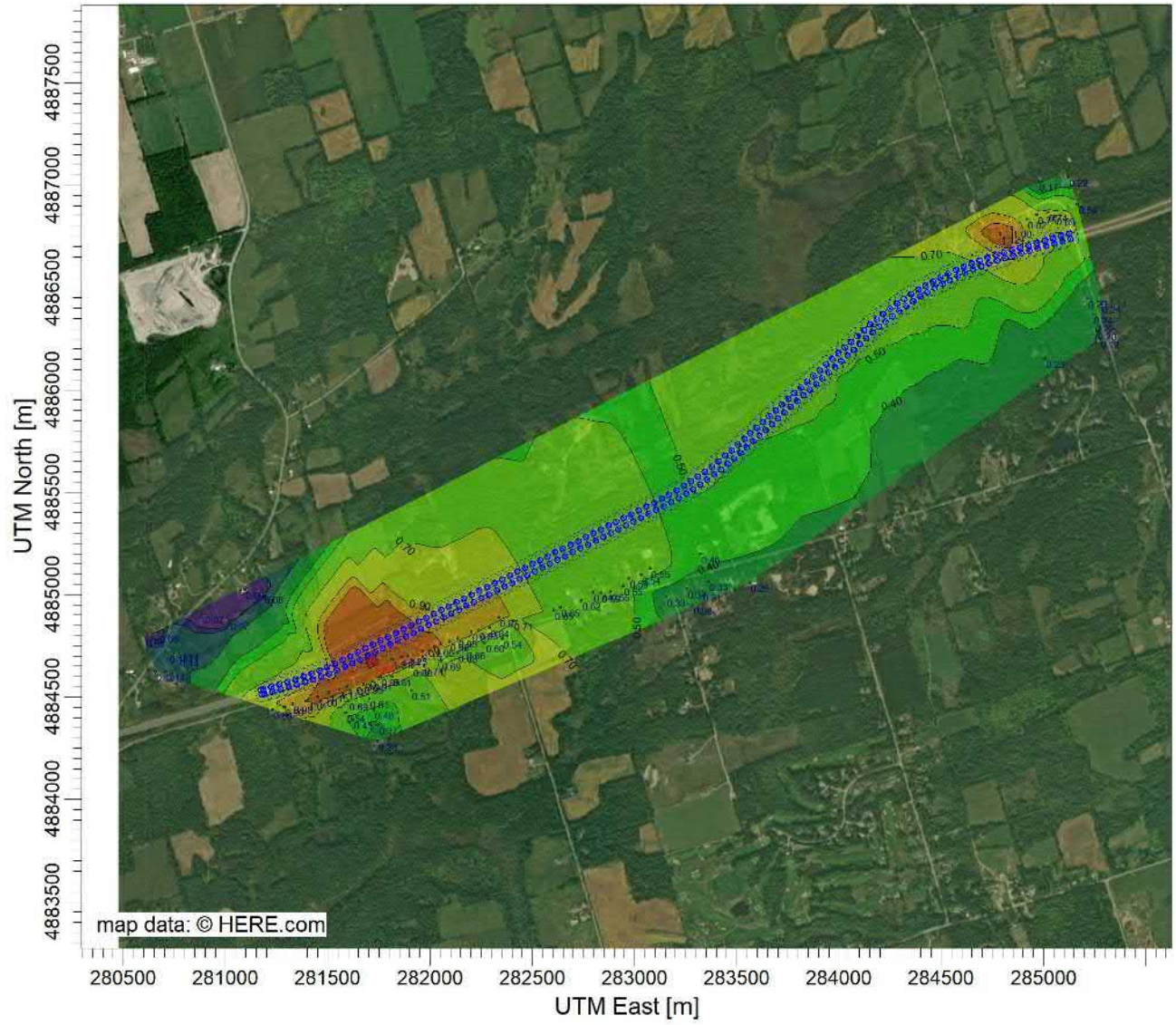
Max: 1.549E+00 [ug/m^3] at (281723.71, 4884660.45)

4.997E-02 5.000E-02 6.000E-02 8.000E-02 1.000E-01 3.000E-01 5.000E-01 6.000E-01 8.000E-01 1.000E+00 1.429E+00

COMMENTS: PM2.5 Annual	SOURCES: **2**	COMPANY NAME: **WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:33,628 0 1 km	
	MAX: **1.549E+00 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

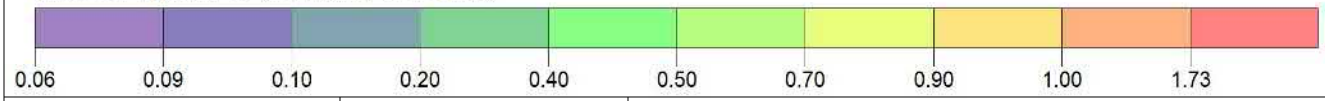
PROJECT TITLE:

Highway 401 Brighton 2041 Full Build
Section 7 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

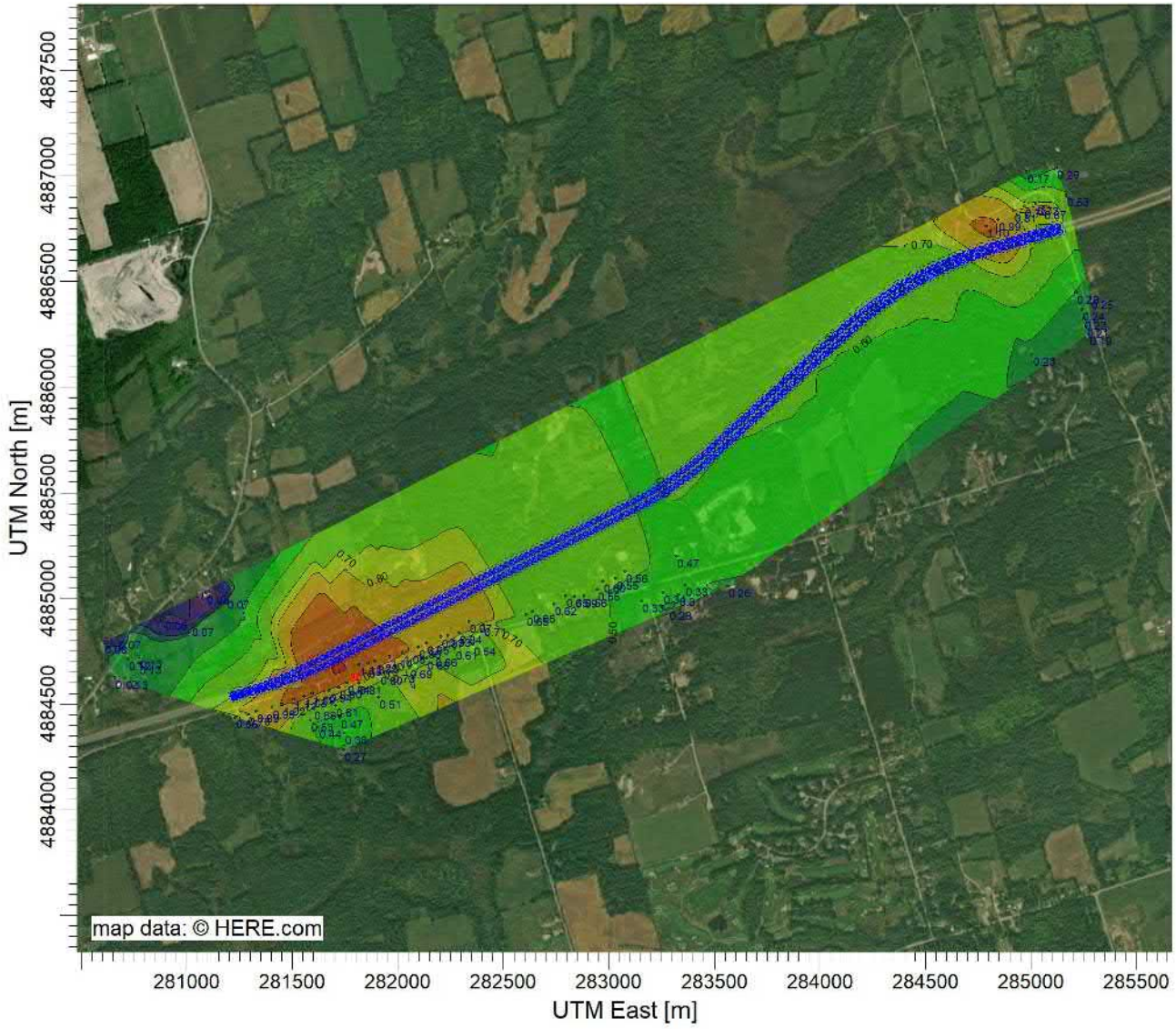
Max: 1.87 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:33,525 0 1 km	
	MAX: **1.87 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**

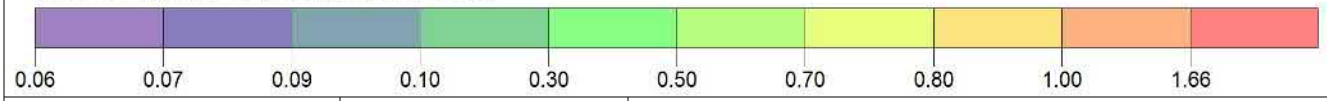
PROJECT TITLE:

Highway 401 Brighton 2041 No Build
Section 7 - PM2.5



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL ug/m^3

Max: 1.80 [ug/m^3] at (281723.71, 4884660.45)



COMMENTS:	SOURCES:	COMPANY NAME:	
PM2.5 Annual	**2**	**WSP**	
	RECEPTORS: **84**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:32,614 0 1 km	
	MAX: **1.80 ug/m^3**	DATE: **01-Mar-23**	PROJECT NO.: **17M-01712-11**