Air Quality Impact Statement (AQIS) Report

Proposed Building Expansion
4239 West Ferdinand Street, Chicago, Illinois 60624

November 08, 2022

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Acronym List

Acronym	Definition
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AERMAP	AERMOD Terrain Preprocessor
AERMET	AERMOD Meteorological Data Preprocessor
AGL	Above Ground Level
AMS	American Meteorological Society
AMSL	Above Mean Sea Level
AP-42	USEPA Compilation of Air Pollutant Emission Factors
AQIS	Air Quality Impact Statement
Btu	British thermal unit
°C	degrees Celsius
CDPH	Chicago Department of Public Health
cfm	cubic feet per minute
EF	Emission Factor
g	Gram
GUI	Graphical User Interface
hp	horsepower
IEPA	Illinois Environmental Protection Agency
kv	kilovolt
kW	kilowatt
LOS	Levels of Service
MBH	Million Btu-per-hour
M	Molecular weight of the gaseous pollutant
MET	Meteorological
MOVES	Motor Vehicle Emissions Simulator
mph	mile per hour

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Acronym	Definition
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NEPA	National Environmental Policy Act
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides (NO and NO_2)
NWS	National Weather Station
ph	phase
PM	Particulate Matter
$PM_{2.5}$	Particulate matter with aerodynamic diameter less than 2.5 microns
PM_{10}	Particulate matter with aerodynamic diameter less than 10 microns
ppb	Parts per billion
Roux	Roux Associates, Inc.
Site	Proposed Development Site, 4540 W. Ann Lurie Place, Chicago, Illinois
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VMT	Vehicle Miles Travelled
µg/m3	micrograms per cubic meter

Executive Summary

On behalf of Ryan Companies, Roux Associates, Inc. (Roux) has prepared this Air Quality Impact Statement (AQIS) report for the proposed Building Expansion of the site located at 4239 West Ferdinand Street in the City of Chicago, Cook County, Illinois (Site). The purpose of this AQIS report is to present the results of an air quality impact analysis designed to evaluate the potential site operation impact on the ambient air quality. This air quality analysis was performed in accordance with the requirements of the Chicago Department of Public Health's Air Quality Impact Evaluation Interim Guidance publication dated September 2021 (CDPH, 2021).

The intent of the ambient air impact analysis is to evaluate whether the proposed building expansion project at the Site is protective of the National Ambient Air Quality Standards (NAAQS). NAAQS are maximum concentrations of criteria pollutants in the ambient air that are required by the Clean Air Act to be established by the United States Environmental Protection Agency (USEPA) under the Clean Air Act at levels that are protective of public health.

For purposes of this air quality analysis, it was assumed that the proposed stationary equipment consists of sources related to typical building support functions such as steam or heat generation, fire suppression systems, or emergency power generation. Currently, the only combustion sources for the building expansion are assumed to be one natural gas-fired 1,600,000 Btu-per-hour space heater, one potential 100-kW diesel emergency backup power generator, and one potential 50-hp diesel-fired fire pump as fire suppression support. It was conservatively assumed that the space heater operates 24 hours per day for 365 days a year, the emergency backup power system and the fire pump operate 500 hours per year.

The on-Site and off-Site portion of the study estimates mobile-source emissions of Nitrogen Dioxide (NO_2), particulate matter less than 10 micrometers aerodynamic diameter (PM_{10}) and particulate matter less than 2.5-micron aerodynamic diameter ($PM_{2.5}$), associated with the proposed building expansion and intersections, which was identified in a completed Traffic Impact Study, prepared by Kimley-Horn and Associates, Inc. (Kimley-Horn) on September 15, 2022 (Kimley-Horn, 2022). Mobile-source emissions estimates were based on EPA's Motor Vehicle Emission Simulator (MOVES) emission modeling system.

Dispersion modeling was conducted using BREEZE AERMOD model Version 10.0 that includes the latest version of the U.S. EPA-approved AERMOD dispersion modeling system (AERMOD Version 21112). American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) is a gaussian mathematical dispersion model that can predict ambient concentrations of pollutants that result from releases to the atmosphere. AERMOD uses hour-by-hour meteorological data to predict the patterns of ambient concentrations of pollutants over time.

To evaluate the potential impacts of emissions from the proposed Site development on the public, the dispersion modeling evaluation must consider the existing background concentrations of pollutants in the area where impacts are being evaluated. The background concentration of a given pollutant is added to the modeled impact from the proposed Site development, and the result is compared to the NAAQS. The NAAQS are allowable concentration limits applied at the public access boundary.

The model predictions indicate the potential impacts from stationary and mobile sources related to the Site expansion building's activities after the proposed development project is completed will be negligible, and therefore will not lead to localized exceedances of the NAAQS for NO_2, PM_{10}, and $PM_{2.5}$. The highest 1-hour average NO_2 concentration reach as high as 66.5 ppb with the seasonal hourly background concentration (below the NAAQS of 100 ppb). The highest annual average NO_2 concentration is of the order of 19.6 ppb (below the allowable NAAQS of 53 ppb). The highest 24-hour average PM_{10} concentration of 103.2 µg/m3 is also below the NAAQS of 150 µg/m3. The highest 24-hour average $PM_{2.5}$ concentration reach as high as 24.1 µg/m3 (below the NAAQS of 35 µg/m3). The highest annual average $PM_{2.5}$ concentration is of the order of 10.2 µg/m3 (below the allowable NAAQS of 12 µg/m3).

The estimates may reflect conservative assumptions regarding vehicle utilization and facility-related activities. Predicted concentrations generally decrease rapidly with distance from the Site boundary, characteristic of the dispersion of emissions from a ground-level (area) source. In addition, the AP42-based value for the space heaters is based on the assumption that the heater unit operates 24 hours per day for 365 days a year, the emergency backup power system operates 500 hours per year, and the fire pump system operates 500 hours per year. These may greatly overestimate actual emissions. It is unlikely that the heater will run all the time throughout the entire day or during certain seasons (e.g., summer).

1. Introduction

On behalf of Ryan Companies, Roux Associates, Inc. (Roux) has prepared this Air Quality Impact Statement (AQIS) report for the Building Expansion site (Site) located at 4239 West Ferdinand Street in the City of Chicago, Cook County, Illinois (**Figure 1**). The Site is located south of West Ferdinand Street and east of North Kilbourn Avenue in Chicago, Illinois. The purpose of this AQIS report is to present the results of an air quality impact analysis designed to evaluate the potential site operation impact on the ambient air quality.

The intent of the ambient air impact analysis is to evaluate whether the proposed building expansion project at the Site is protective of the National Ambient Air Quality Standards (NAAQS). NAAQS are concentrations of specific pollutants in the ambient air that are established by the USEPA under the Clean Air Act at levels that are protective of public health. When the measured concentrations of these specific pollutants in the ambient air are below the NAAQS, it is presumed that public health is protected. Large sources of air emissions that are required to undergo certain types of permitting under the Clean Air Act must conduct an ambient air impact analysis prior to implementation. For these types of sources, the analysis must demonstrate that the NAAQS will not be exceeded as a result of the additional source(s). Although the proposed Development Project is not subject to Clean Air Act permitting requirements, the same tools may be used to evaluate its impacts on the ambient air. The City of Chicago has requested that an air quality impact statement be submitted to demonstrate the protection of the NAAQS.

For an emission source that has not been constructed, pollutant concentrations in ambient air are predicted through the use of air dispersion models. In these circumstances, air dispersion modeling is performed to attempt to predict the impacts of the proposed source on the ambient air in the area surrounding the facility. Air dispersion models predict the concentrations of pollutants in the ambient air surrounding the Site, based on the Site's maximum emissions, for each hour of the day and year using historical local meteorological data. The pollutant concentrations predicted by the air dispersion modeling are then added to existing background concentrations (using values that have been measured over a year or more) of each pollutant. The summed results are then compared to the NAAQS. Air dispersion models are designed and rigorously tested to take into account realistic scenarios and yield conservative results when predicting ambient air quality impacts.

Air dispersion models are built using mathematical equations and algorithms that represent known atmospheric processes and incorporate empirical data. Modeling of ambient air quality impacts from the proposed Development Project was conducted using the latest version of the regulatory dispersion model developed by the American Meteorological Society (AMS) and the EPA, the AMS/EPA Regulatory Model, known as AERMOD. The modeling analysis used a continuous five-year record of meteorological data comprised of nearest station's temperature and wind data.

The main pollutants of concern are NO_2, particulate matter less than 10 micrometers aerodynamic diameter (PM_{10}), and particulate matter less than 2.5-micron aerodynamic diameter ($PM_{2.5}$) from Project-generated traffic and from building heaters and forklifts. The NO_X emissions include NO emissions that are converted to NO_2 in the atmosphere, as well as directly emitted NO_2.

1.1 Report Organization

This AQIS report is organized into five sections: **Section 1.0** is an introduction to the report; **Section 2.0** provides a Site description and project background; **Section 3.0** presents an overview of air quality analysis methodology; **Section 4.0** summarizes the results of the air quality analysis; and **Section 5.0** includes a list of references used to prepare this report. A list of acronyms and abbreviations is provided following the Table of Contents.

The current site plan and the proposed building expansion are shown in **Appendix A**. Stationary Source emission calculations are summarized in **Appendix B**. Summary of mobile source link input parameters are shown in **Appendix C**. **Appendix D** summarizes the estimated mobile source link emission rates for NO_2, PM_{10}, and $PM_{2.5}$. AERMOD model input information is presented in **Appendix E**. CDPH-provided Seasonal Hourly NO_2 Background Concentrations Table is presented in **Appendix F**. AERMOD Model Electronic Run Files are included in **Appendix G**.

2. Site Background and Project Overview

2.1 Proposed Development Description

Chicago Beverage Systems is planning to increase daily operations, which requires an expansion of the existing building. The Development Project consists of the expansion of an existing warehouse building with loading docks and parking lots for employees, customers, and truck trailers. The proposed plan includes an expansion of approximately 81,000 square feet on the east side of the existing 289,000 square-foot facility. Access to the existing employee parking lots is provided on both sides of Kilbourn Avenue and would remain in place.

With the proposed building expansion, the loading docks would be relocated from the existing portion of the building to the newly constructed east side of the building. Additionally, the number of truck docks would be increased to 20 docks. The existing truck parking lot located immediately east of the proposed building expansion would be modified. Currently, access to the truck parking lot is provided via one full-access driveway to Ferdinand Street. The proposed plan would convert the existing full-access driveway to an exit-only driveway and an entrance-only driveway from Ferdinand Street would be established in the northeast corner of the parking lot. To be consistent with the Traffic Impact Study, the air quality evaluations are completed for Year 2028.

2.2 Purpose of Air Quality Modeling and Submittal of Report

Both on-Site and off-Site activities of the proposed development at the Site will increase emissions in the area surrounding the Site. Therefore, air quality modeling was performed to identify, to the extent feasible, the impact those emissions would have on ambient air quality. The City of Chicago (“City”), in accordance with the Chicago Air Quality Ordinance requirements, has requested that an air quality impact analysis be submitted to demonstrate that the NAAQS will be protected. The objective of this modeling effort is to provide an assessment of pollutant concentrations in ambient air and the resulting potential impacts on the public.

2.3 Air Quality Regulatory Framework

The Air Quality Ordinance, approved by City of Chicago Council in March 2021, regulates the construction and expansion of certain facilities that create air pollution. For certain types of operations, the ordinance requires site plan review and approval by various departments including the Chicago Department of Public Health (CDPH). An air quality impact study, which will be reviewed by CDPH, must be included as part of the site plan submittal. The air quality impact study will model potential emissions from the business and its proposed operations using air modeling software, such as the U.S. EPA’s AERMOD and EPA MOVES, to evaluate emissions from various sources.

This document presents the methodologies that were followed for the MOVES and AERMOD modeling as requested by the City, as well as the results of that modeling. The modeling methodologies presented herein were followed to assess ambient air quality impacts from the proposed development project when the Site is ready for its potential operation and has excluded an evaluation of the construction of the facility. This report has been developed following recommendations of the USEPA Guideline on Air Quality Models (Guidelines, 40 CFR Part 51, Appendix W, January 2017) and Chicago Department of Public Health (CDPH) Air Quality Impact Evaluation Interim Guidance (CDPH, 2021).

3. Air Quality Analysis Methodology

This section describes the air dispersion modeling methods, procedures, assumptions, and datasets that were used for the air quality analyses. The methodologies that were followed to calculate the pollutant emissions from each area source (no point sources are currently proposed) within the proposed project site as well as mobile-source emissions associated with the proposed facility and intersections are summarized below.

3.1 Stationary Equipment Emissions

Roux compiled information about proposed stationary sources of air emissions at the Site and documented the types and quantities of air contaminants expected to be generated from these sources under assumed worst-case facility operating conditions. This information was used to evaluate NO_2, $PM_{2.5}$ and PM_{10} emissions from each point source within the proposed project at the Site.

3.1.1 Combustion Sources

For purposes of this air quality analysis, it assumed that the proposed on-Site stationary combustion sources consist of sources related to typical building support functions such as steam or heat generation, fire suppression support, or emergency power generation. Subsequent information provided by the project's mechanical, electrical, and plumbing engineer indicates that at this stage of the project the only potential stationary sources are:

- One natural gas-fired 1,600,000 British thermal unit (Btu)-per-hour space heaters;
- One 100-kW diesel emergency backup power generator;
- One 50-hp diesel-fired fire pump as fire suppression support; and

Space Heaters

There is one natural gas-fired 1.6 MMBTU/hr space heater assumed to be roof mounted on the expansion building. It was conservatively assumed that all operating units run 24 hours per day for 365 days a year resulting in a total of 8,760 hours of operation per year for each unit. Emissions were estimated using USEPA Compilation of Air Pollutant Emissions Factors (AP-42) for natural gas combustion from Chapter 1.4. The average gross heating value of natural gas is assumed to be approximately 1,020 British thermal units per standard cubic foot (Btu/scf). The calculated emissions rates of each pollutant from four space heaters are summarized in **Table 1**. Details of source emission calculations are presented in **Appendix B**.

Emergency Backup Power System

The backup power system is assumed to be a 100-kW diesel generator. Emission calculations utilize emission factors for criteria air pollutants provided in EPA's AP-42 Compilation of Air Pollutant Emission Factors (AP-42) Section 3.3, Gasoline and Diesel Industrial Engines (EPA, 1996). Emissions calculated using AP-42 emission factors (lb/hp-hr) for a typical generator engine with less than 600 hp multiplied by the engine's power rating (hp) (based on a conversion factor of 1.34 hp/kW) and by the total annual operating hours (assumed to be 500 hours per year for the maximum allowable hours of operation for an emergency generator). The calculated emissions rates of each pollutant from the emergency backup power system are summarized in **Table 1**. Details of source emission calculations are presented in **Appendix B**.

Fire Pump (Fire Suppression Support)

The fire pump is assumed to be a 50-hp diesel-fueled fire pump. Emission calculations utilize emission factors for criteria air pollutants provided in EPA's AP-42 Compilation of Air Pollutant Emission Factors (AP-42) Section 3.3, Gasoline and Diesel Industrial Engines (EPA, 1996). Emissions calculated using AP-42 emission factors (lb/hp-hr) for a typical generator engine with less than 600 hp multiplied by the engine's power rating (hp) and by the total annual operating hours (assumed to be 500 hours per year for the maximum allowable hours of operation for a fire pump). The calculated emissions rates of each pollutant from the fire suppression support system are summarized in **Table 1**. Details of source emission calculations are presented in **Appendix B**.

Table 1: Calculated Emissions Rates from Stationary Sources

Pollutant	Emission Rate				Unit
	Space Heater[1]	Emergency Backup Power[2]	Fire Pump[2]	Total	
NO_2	2.63E-06	3.69E-07	1.38E-07	**3.13E-06**	gr/(sec.m^2)
PM_{10}	2.00E-07	2.62E-08	9.77E-09	**2.36E-07**	gr/(sec.m^2)
$PM_{2.5}$	2.00E-07	2.62E-08	9.77E-09	**2.36E-07**	gr/(sec.m^2)

Notes:
[1] Emission factors from AP-42, Chapter 1.4
[2] Emission factors from AP-42, Chapter 3.3

3.1.2 Fugitive Dust

Atmospheric dust arises from the mechanical disturbance of granular material exposed to the air. Dust generated from these open sources is termed "fugitive" because it is not discharged to the atmosphere in a confined flow stream. Common sources of fugitive dust include unpaved roads, agricultural tilling operations, aggregate storage piles, and heavy construction operations. For this Site it is assumed that impacts from fugitive dusts are transient as they relate to construction activities only. Therefore, the air quality impact analysis is conducted for post-development conditions only and no fugitive dust emission sources are modeled.

3.2 Mobile Sources Emissions

The on-Site and off-Site portion of the study estimated mobile-source emissions of $PM_{2.5}$, PM_{10} and NO_2, associated with the proposed facility building expansion and intersections, which was identified in a completed Traffic Impact Study, prepared by Kimley-Horn and Associates, Inc. (Kimley-Horn) on September 15, 2022 (Kimley-Horn, 2022). Mobile-source emission rates were modeled using EPA's Motor Vehicle Emission Simulator (MOVES) emission modeling system. Emission factor lookup tables provided by CDPH was used to prepare emissions inventories for mobile equipment. The tables were created from the USEPA's most recent version of MOVES. Emission factors are based on default inputs available in MOVES as obtained directly from the USEPA as well as inputs prepared by Chicago Metropolitan Agency for Planning (CMAP).

3.2.1 Traffic Data Preparation

Traffic data was obtained from the Traffic Impact Study (Kimley-Horn, 2022) for the calendar years 2022 (actual observations) and 2028 (projections). The Traffic Impact Study evaluated the potential traffic impacts of a proposed expansion of the existing Chicago Beverage Systems facility south side of West Ferdinand Street and the east of North Kilbourn Avenue in Chicago, Illinois. According to the Traffic Impact Study (Kimley-Horn, 2022), traffic counts at the existing driveways were used to calculate site-generated trips associated with the increased operations and building expansion. The building is proposed to be expanded by approximately 30 percent, with operations expected to scale up proportionally with the building floor area. However, to provide a conservative analysis, the existing site traffic volumes were doubled. **Table 2** shows the weekday morning and evening peak hour traffic estimated to be generated by the proposed development.

Table 2: Trip Generation Estimates from Traffic Impact Study

Vehicle Type	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour	
	In	Out	In	Out
Passenger Cars	10	0	20	15
Trucks	0	0	0	0

Notes:
- Projected volumes are conservatively estimated as equal to the existing trip generation associated with the current 289,000 square-foot facility.
- Truck operations on site are expected to remain consistent with existing conditions, only relocated to the east side of the building.

Based on the traffic counts that were performed on Wednesday, August 10, 2022, during the weekday morning (7:00 to 9:00 A.M.) and evening (4:00 to 6:00 P.M.) peak periods, the weekday morning peak hour generally occurs from 7:30 to 8:30 A.M. and the weekday evening peak hour generally occurs from 4:15 to 5:15 P.M.

The idling emissions are calculated based on the estimated future build traffic study Levels of Service (LOS) delay in seconds per vehicle at each modeled intersection based on traffic analysis reported in Tables 4.1 of the Traffic Impact Study (Kimley-Horn, 2022). The overall intersection delays for projected conditions in Year 2028 are summarized in **Table 3**.

Table 3: Overall Intersection Delays - Projected Conditions in Year 2028

Intersection	AM Overall Delay (sec)	PM Overall Delay (sec)	Average Overall Delay (sec)
Stop Sign @ Kilbourn Avenue / Ferdinand Street	9.5	10.75	**10.13**
Stop Sign @ Kilbourn Avenue / North Car Access	9.5	10.5	**10**
Stop Sign @ Kilbourn Avenue / Parking Lot Access/South Car	11	10.25	**11.63**
Stop Sign @ Ferdinand Street / Truck Exit	9	9	**9**
Stop Sign @ Fleet Management Driveway / Ferdinand Street	8.5	8	**8.25**

Intersection	AM Overall Delay (sec)	PM Overall Delay (sec)	Average Overall Delay (sec)
Stop Light @ Kilbourn Avenue / Chicago Avenue	14.67	51	**32.83**
Stop Light @ Kilbourn Avenue / Lake Street	13.4	14.8	**14.1**

Notes:
AM – Morning Peak Hour, PM – Evening Peak Hour
AM and PM overall delays were calculated by averaging delays from all bounds reaching the intersection
Reference: Kimley-Horn, 2022 Table 4.1

3.2.2 Mobile Sources Emissions

The Microsoft Excel lookup table "*CookCountyIL_MOVES_LookupTable_2021-2030_On-Road_CDB.xlsx*" was downloaded from CDPH website (*https://www.chicago.gov/content/dam/city/sites/air-quality-zoning/air-quality-impact-study/movesTables_3-1-2022.zip*) includes default PM_{10}, $PM_{2.5}$ and NOx emission factors for multiple vehicle types, road types, and vehicle speeds. These specific mobile source emission factors are for Cook County using the most current USEPA MOVES modeling system (MOVES3). All major roads were assumed to have a 30-mph speed limit. Vehicles will travel on Site Access roads at approximately 15 miles per hour (mph) in links entering and exiting the Site. **Figure 2** shows the links locations with proposed development traffic impact.

Traffic emissions are calculated based on the maximum vehicle miles travelled (VMT) on each road segment. The total VMT was calculated using the traffic counts on each segment multiplied by the length of each segment to obtain an emission rate in grams/hour. These traffic emissions are then divided by 3,600 seconds/hour to obtain a modeled grams/second emission rate for input into the modeling. Finally, the emission rates were divided by each segments area (link length multiplied by the link width) to get the emission rates per unit area ($g/s/m^2$), which was used as an input information into AERMOD.

Idling emissions are applied at multiple intersections surrounding the Site and at vehicle idling spots on-Site at the following locations:

- Stop Sign @ Kilbourn Avenue & Ferdinand Street (Link 33)
- Stop Sign @ Kilbourn Avenue & North Car Access (Link 34)
- Stop Sign @ Kilbourn Avenue & Parking Lot Access/South Car (Link 35)
- Stop Sign @ Ferdinand Street & Truck Exit (Link 36)
- Stop Sign @ Fleet Management Driveway & Ferdinand Street (Link 37)
- Stop Light @ Kilbourn Avenue & Chicago Avenue (Link 38)
- Stop Light @ Kilbourn Avenue & Lake Street (Link 39)
- Passenger car idling in the parking lot on the East side of the Site (Link Pass-Idle)

Zero idling is expected for on-Site passenger vehicles since their primary role would be employee traffic entering and parking in the designated lot(s). However, to be conservative, it was assumed that the passenger cars will idle for 5 minutes per hour on-Site. To calculate the idling and traffic emissions per road segment, the total number of vehicles for each hour were multiplied by the anticipate delay at each intersection (average of overall AM and PM delays) to arrive at a total amount of vehicle delay (minutes).

This is multiplied by the grams/hour emission factor divided by 60 minutes/hour to obtain grams/hour for each hour. These emissions are divided by 3,600 seconds/hour to obtain the modeled grams/second emission rate. Finally, the emission rates were divided by each segments area (link length multiplied by the link width) to get the emission rates per unit area (g/s/m^2), which was used as an input information into AERMOD.

Overall, two types of links were evaluated including:

- 32 on-network travel links (Links 1 through 32) that were used to describe driving activities of passenger cars on-Site and on the roads surrounding the Site that will be impacted by the proposed development; and
- 8 off-network idle links (Links 33 through 39, and Pass-Idle) that were used to describe areas of idling activities (i.e., idling of vehicle at intersections and exit stops as well as idling of passenger cars in parking areas on-Site).

Details of source emission calculations are presented in **Appendix B**. Summary of mobile source link input parameters are shown in **Appendix C**. Emission rates were then used for AERMOD dispersion modeling, which is further described in following Section. **Appendix D** summarizes the estimated mobile source emission rates for NO_2, PM_{10}, and $PM_{2.5}$.

3.3 Dispersion Modeling

Dispersion modeling was conducted using BREEZE AERMOD Version 10.0 that includes the latest version of the USEPA-approved AERMOD dispersion modeling system (AERMOD Version 21112). AERMOD is a computer-based mathematical dispersion model that can predict ambient concentrations of pollutants that result from releases to the atmosphere. AERMOD uses hour-by-hour meteorological data to predict the patterns of ambient concentrations of pollutants over time.

AERMOD's three models and required model inputs, are described as follows:

- AERMET: calculates boundary layer parameters for input to AERMOD
  - Model inputs: wind speed; wind direction; cloud cover; ambient temperature; morning sounding; albedo; surface roughness; Bowen ratio; and
  - Model outputs for AERMOD: wind speed; wind direction; ambient temperature; lateral turbulence; vertical turbulence; sensible heat flux; friction velocity; Monin-Obukhov Length.
- AERMAP: calculates terrain heights and receptor grids for input to AERMOD
  - Model inputs: DEM data [x,y,z]; design of receptor grid (pol., cart., disc.); and
  - Model outputs for AERMOD: [x,y,z] and hill height scale for each receptor.
- AERMOD: calculates temporally averaged air pollution concentrations at receptor locations for comparison to the NAAQS
  - Model inputs: source parameters, boundary layer meteorology (from AERMET), and receptor data (from AERMAP); and
  - Model outputs: temporally averaged air pollutant concentrations

3.3.1 Regional and Local Topography

The landforms of Cook County are mostly the result of depositional glacial processes. The significant topographic features include broad almost level plains that were once lake beds; concentric, subparallel ridges formed as moraines marking the outer margins of continental glaciers, and gentle, elongate sandy spits, bars and beach ridges formed along the shore of glacial Lake Chicago and other ancestors of present-day Lake Michigan.

The highest point in Cook County is at the northwest corner and is almost 1,000 feet above sea level. For most of the county the topography slopes gradually toward Lake Michigan to the east and is dissected by north-south trending stream-cut valleys. Most of the central and southeastern portion of Cook County is composed of a low flat plain. **Figure 3** shows the local topography of the area surrounding the Site.

The A 1/3 arc-sec (approximately 10-meter) resolution United States Geological Survey (USGS) National Elevation Dataset (NED) file "*USGS_NED_13_n42w088.tif*" that covered the Site in southwest Chicago Area was downloaded from CDPH website (https://www.chicago.gov/content/dam/city/sites/air-quality-zoning/resources-for-applicants/AERMAPData.zip). The 18081 version of the AERMOD terrain preprocessor, AERMAP, was used to develop the hill heights.

3.3.2 Regional Climatology

The Site is located within Cook County, Illinois. The county receives, on average, 34 inches of precipitation annually and approximately 178 days with measurable precipitation. The average wind speed is 9 mph. Long-term climatological data is summarized in **Table 4** below for the Cook County region calculated over a period of 10 years from 2011 through 2020. While regionally representative, the climatology data can be assumed to differ slightly from that at the Site.

Table 4: Cook County Monthly Averages of Climatology Parameters

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temp. (F)	Hi 29° Lo 20°	Hi 31° Lo 21°	Hi 44° Lo 33°	Hi 54° Lo 41°	Hi 66° Lo 52°	Hi 75° Lo 62°	Hi 80° Lo 68°	Hi 80° Lo 67°	Hi 74° Lo 61°	Hi 61° Lo 49°	Hi 47° Lo 37°	Hi 36° Lo 28°
Avg. Wind Speed (mph)	11	10	10	10	9	8	7	7	8	10	10	10
Avg. Precip. (in)	1.5	1.6	2.0	3.0	4.0	4.9	4.4	3.8	2.6	2.6	1.4	1.5
Average Humidity (%)	82	82	74	73	75	77	77	75	72	70	71	77
Avg. Cloud Cover (%)	60	58	49	48	40	30	25	24	27	40	42	55
Barometric Pressure (in)	30.1	30.1	30.1	30.0	30.0	29.9	30.0	30.0	30.0	30.0	30.1	30.1
Average Dry Days	12	12	19	22	24	23	25	25	27	26	21	15
Avg. Precip. Days	5	4	6	6	7	7	6	6	3	5	4	5
Average Snow Days	14	13	6	2	0	0	0	0	0	0	5	10
Average Fog Days	1	1	1	1	2	2	1	1	0	0	0	1
Average UV Index	1	2	2	3	5	6	6	5	4	3	1	1
Avg. Hours of Sun	202	187	256	249	292	319	344	351	321	282	266	227

Notes:
Averages are based on historical weather data from the past 10 years (2012-2021).
Source: https://www.weatherwx.com/hazardoutlook/il/cook+county.html

3.3.3 Meteorological Data and Land Use

AERMOD requires an input of hourly meteorological data to estimate pollutant concentrations in ambient air resulting from modeled source emissions. The USEPA's Guideline on Air Quality Models states that "*5 years of NWS meteorological data or at least 1 year of site-specific data is required*" for an air quality modeling analysis (40 CFR 51, Appendix W, 8.3.1.2 b.). The use of 5 years of meteorological data allows for an assessment of conditions that occur at both the Site location as well as at the surface meteorological data collection location, even if they occur at differing times. AERMOD requires upper air and surface characteristic data.

In accordance with the Chicago Air Quality Ordinance, upper air sounding data were obtained from the upper air monitoring station most geographically proximate to the surface station site. The nearest upper air data collection site, relative to the Project Area, which is located greater than 4 miles from the lakeshore and north of the Eisenhower Expressway, is Chicago O'Hare with the base elevation of 188.4 meters above mean sea level (AMSL). This station is the nearest and most representative surface station to the Site. The 5 years (i.e., 2016 through 2020) of AERMOD-ready data processed using data for Chicago O'Hare was obtained from CDPH website.

The meteorological data is summarized in the wind rose shown in **Figure 4**. Winds most commonly originate from the southwest and westerly directions in general, though winds originate from all directions for at least some percentage of time. The average wind speed over the 43,848 available hourly measurements from 1/1/2016 through 12/31/2020 timeframe was 10.2 mph with a maximum wind speed of 37.3 mph.

The 18081 version of the AERMOD terrain preprocessor, AERMAP, was used to develop the receptor elevations and hill heights. A 1/3 arc-sec (10-m) resolution United States Geological Survey (USGS) National Elevation Dataset (NED) file was used for this processing.

Modeling was conducted for emissions of NO_2, PM_{10} and $PM_{2.5}$ from on-Site stationary and mobile sources as well as off-Site on-road vehicle activities. The air quality analysis includes dispersion modeling for the pollutants and averaging periods presented below and were used for compliance demonstration (i.e., comparison with NAAQS).

- NO2 – Annual and 1-hour averaging period
- PM10 –24-hour averaging period
- $PM_{2.5}$ - Annual and 24-hour averaging period.

Particulate matter deposition using particle size data was not considered for any modeling runs, resulting in no removal of mass from the plume, and hence likely more conservative predictions of impacts to ambient air. USEPA recommended default value of ambient equilibrium NO_2/NOx ratio (i.e., the maximum allowed ratio) was set to 0.9.

3.3.5 Emission Sources and Rates

AERMOD has the capability of modeling various types of stationary and mobile sources that include area sources, volume sources, and line sources as line volume sources. Both volume sources and area sources could be used to represent roads according to CDPH Air Quality Impact Evaluation Interim Guidance (CDPH, 2021). In BREEZE AERMOD, area sources were used for modeling of the emissions from on-Site stationary sources (i.e., space heaters) as well as on-network and off-network mobile sources. The following release heights above ground level (AGL) for each source type were assumed:

- Stationary Sources: The space heaters, emergency backup power system, and Fire Pump (Fire Suppression Support) were modeled as area sources with the horizontal dimensions (length and width) of the Warehouse building and release heights equal to 5.3 meters AGL (using a 35 foot building height), based on the assumption that the average diffuse release will be spread uniformly over the entire area of the Warehouse footprint.
- On-Network Mobile Sources: An average release height of 1.3 m AGL was assumed for all on-network links where passenger cars contribute to the emissions.
- Off-Network Idle Mobile Sources: The parking lots were modeled as area sources with the horizontal dimensions of the parking lot and dock lengths, width of 8 meters, and a release height equal to half the design height of the vehicles (i.e., weighted release height of equal to 1.3 meters AGL).

Following CDPH Air Quality Impact Evaluation Interim Guidance, roads were modeled as area sources where ambient receptors are located within source dimensions or where other mechanical sources are emitting in the general vicinity of the road. For each link, an area source was located at the centerline of the road in each direction. The following input parameters were calculated and summarized in **Table 5:**

- *Top of Plume Height = 1.7 × (vehicle height)*
- *Release Height = 0.5 × (top of plume height)*
- *Initial vertical dimension = (top of plume height) / 2.15*

Table 5: Vehicle Release Parameters

Parameter	Passenger	Truck	Weighted Value
Daily Passenger Car/Truck Percentage	100%	0%	
Vehicle Height (m) - assumed	1.5	4.0	**1.5**
Top of Plume Height (m)	2.6	6.8	**2.6**
Release Height (m)	1.3	3.4	**1.3**
Initial Vertical Dimension (m)	1.2	3.2	**1.2**

Notes:
Overall Daily Passenger Cars and Truck percentages were used to calculate the weighted values

One area source was used to represent all stationary sources emissions (i.e., space heaters, emergency backup power system, and fire suppression support). The building height is assumed to be 35 ft, so a release height of half of the building height (17.5 ft) was assumed. An initial vertical dimension of 16.28 ft (building height divided by 2.15 for a surface-based source) was assumed. Heater emissions were spread out evenly across the total area of the area source. **Table 6** provides the modeling design parameters of each source of emissions.

An approximately 4 km x 4 km AERMOD modeling area was selected as the AERMOD modeling domain. AERMOD Modeling Domain and Source Layout is shown in **Figure 5** and **Figure 6**. The emissions sources were input to AERMOD with the calculated emission rates in gram/(second.m^2) multiplied by the emission factors. For stationary sources it was conservatively assumed that the space heaters operate 24 hours per day for 365 days a year, emergency generator and fire pump each operate 500 hours per year for the maximum allowable hours of operation. For mobile sources, it was conservatively assumed that the peak volumes from the traffic study (Kimley-Horn, 2022) occurred throughout the entire 24 hours of the day. AERMOD model input information is presented in **Appendix E**.

Table 6: AERMOD Modeling Design Parameters

Modeling Parameters	Stationary Source(s)	Mobile Source(s)
AERMOD Executable	EPA Version 21112	
Regulatory Templates	Concentration only, with no depletion options	
Receptor Heights (AGL)	Flagpole receptors at 1.8 m (assumed average breathing height)	
Meteorology Options	Merged 5-year (1/1/2016 through 12/31/2020) surface and upper air data	
Output Options	Receptor, day, and maximum tables, Contour plots, Summary reports and Post files	
Source Type	Area	Area
Emission Rates	NO_2: 3.13E-06 gr/sec.m^2 PM_{10}: 2.36E-07 gr/sec.m^2 $PM_{2.5}$: 2.36E-07 gr/sec.m^2	Variable[1]
Release Height	5.3 m	1.3 m
Initial Vertical Dimension	5.0 m	1.2 m

Notes:
[1] See section 3.2.2 and Appendix C for mobile source emission rates

3.3.6 Receptors

A series of non-uniform receptor points centered on the on-Site stationary and off-Site mobile sources were used for this analysis to estimate ambient pollutant concentrations resulting from the potential emissions. According to USEPA's guidance on Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas (USEPA, 2015):

> "*Receptor spacing in the vicinity of the source should be of sufficient resolution to capture the concentration gradients around the locations of maximum modeled concentrations. The majority of emissions from a highway or transit project will occur within several meters of the ground, and concentrations are likely to be greatest in proximity of near-ground sources. As such, receptors should be placed with finer spacing (e.g., 25 meters) closer to a near-ground source, and with wider spacing (e.g., 100 meters) farther from such a source. While prevailing wind directions may influence where maximum impacts are likely to occur, receptors should also be placed in all directions surrounding a project.*"

The AERMOD receptor network is presented in **Figure 6**. The grid consists of approximately 510 discrete and fence receptors each assumed to be at breathing-level (1.8 meters high). The following receptor spacing and extents around the facility and roads, in accordance with USEPA's guidance, were used for this analysis:

- Fenceline receptors were also included in the model and located approximately every 25 meters along the virtual property boundary for a total of 50 receptors.

- 50-meter (m) spacing along the perimeter of the Site and along roads with mobile sources out to approximately 50 meters from sources;
- 100-m spacing out to approximately 100 meters from sources;
- 250-m spacing between 1 km from sources;
- 250-m spacing between 2 km from sources; and
- Additional receptors of interest, as appropriate, on the boundaries or within the 1.5-km radius from Site.

3.3.7 Building Downwash

The incorporation of building-induced downwash effects into this analysis was not required since there are no point sources proposed. It was assumed that all stationary and mobile sources were diffuse area sources and therefore no building definition and downwash analysis were required.

3.3.8 Design Values

To evaluate the potential impacts of emissions from the proposed Site development on the public, the dispersion modeling evaluation must consider the existing background concentrations of pollutants in the area where impacts are being evaluated. The background concentration of a given pollutant is added to the modeled impact from the proposed Site development, and the result is compared to the NAAQs. The NAAQS are allowable concentration limits applied at the public access boundary.

Only criteria air pollutant impacts were assessed as part of the modeling analysis. The criteria air pollutants which are particulate matter less than or equal in diameter to ten microns (PM_{10}), particulate matter less than or equal in diameter to 2.5 microns ($PM_{2.5}$), and nitrogen dioxide (NO_2). The background design values were obtained from the latest available Illinois Annual Air Quality Report – Air Quality Index for 2020 reporting year (IEPA, 2020). Monitoring stations were selected based on proximity to the Site (i.e., the station closest to the Site with the appropriate criteria pollutant monitoring capability).

The Illinois Environmental Protection Agency (IEPA) operates a network of ambient air monitoring stations throughout Cook County, Illinois (see **Figure 7**). The purpose of the monitoring stations is to measure ambient concentrations of pollutants, including criteria pollutants, to determine whether or not the NAAQS are met or exceeded. Monitoring stations within the Cook County area were evaluated to find a station that best represents the background concentrations for the project site. Without a clear distinction in the topologic and meteorological conditions among these sites, the most representative single monitoring station was selected based on data completeness and the shortest distance to the project site.

Ambient air background concentrations were obtained from the table provided by the City of Chicago Department of Public Health for the project located in Northwest Chicago (i.e., 4 miles or greater from the lakeshore and north of the Eisenhower Expressway). The 3-year ambient design values for each criteria pollutant and averaging period are presented in **Table 7**. Additionally, CDPH has recently provided a Table of Seasonal Hourly Ambient NO_2 Concentrations for use with Southwestern Chicago 1-Hour NO_2 Modeling (see **Appendix F**).

Table 7: Design Values used for the Modeling Analysis

Pollutant	Averaging Period	Design Values*	Unit
NO_2	1-Hour	CDPH Table**	ppb
	Annual	18.1	ppb
PM_{10}	24-Hour	102	μg/m^3
$PM_{2.5}$	24-Hour	24	μg/m^3
	Annual	10	μg/m^3

Notes:
* Data from 2020 Illinois Annual Air Quality Report – Air Quality Index (IEPA, 2020)
** CDPH-provided Table of Seasonal Hourly Ambient NO_2 Concentrations for use with Southeastern Chicago 1-Hour NO_2 Modeling
- NO_2 annual data from IEPA Trailer monitor (AQS ID 17-031-3103)
- PM_{10} data from Village Hall (5000 Glencoe St.) monitor (AQS ID 17-031-1016)
- $PM_{2.5}$ data from IEPA Trailer monitor (AQS ID 17-031-3103)

3.3.9 Post-Development Impact

Post-Development Impacts were calculated by adding modeled receptor values to the design values. The resulting Post-Development Impact concentration was then compared to the NAAQS. The Post-Development Impact concentrations for each pollutant and averaging period are summarized in **Table 8** compared with NAAQS.

- **1-hour NO_2.** The 1-hour NO_2 Post-Development Impact was calculated by first identifying the receptor with the highest 5-year 1-hour average concentration at each receptor across 5 years of meteorological data (as done by AERMOD). The receptor with the highest modeled concentration for a 1-hour period was then added to the design value and compared to the NAAQS. The AERMOD model was created for 1-hour NO_2 with CDPH-provided seasonal hourly background concentrations. For this model run seasonal hourly background concentrations were entered into the AERMOD model and the modeled values include the background concentrations (i.e., design values) and therefore should directly be compared with NAAQS.
- **Annual NO_2.** The annual NO_2 Post-Development Impact was calculated directly by AERMOD by the model averaging the 5 years of annual averages for each receptor and reporting the highest receptor. The receptor with the highest modeled 5-year average concentration was identified, and this value was then added to the design value and compared to the NAAQS.
- **24-hour PM_{10}.** The 24-hour PM_{10} Post-Development Impact was calculated by first identifying the receptor with the highest 5-year 24-hour average concentration at each receptor across 5 years of meteorological data (as done by AERMOD). The receptor with the highest modeled concentration for a 24-hour period was then added to the design value and compared to the NAAQS.
- **24-hour $PM_{2.5}$.** The 24-hour $PM_{2.5}$ Post-Development Impact was calculated by identifying the receptor with the highest 5-year 24-hour average concentration (as done by AERMOD). The receptor with the highest modeled concentration for a 24-hour period was then added to the design value and compared to the NAAQS.
- **Annual $PM_{2.5}$.** The annual $PM_{2.5}$ Post-Development Impact was calculated directly by AERMOD by the model averaging the 5 years of annual averages for each receptor and reporting the highest receptor. The receptor with the highest modeled 5-year average concentration was identified, and this value was then added to the design value and compared to the NAAQS.

AERMOD output concentrations were reported in μg/m^3 units for all pollutants. However, NO_2 concentrations must be converted to the units of parts per billion (ppb) in order to be added to design values and compared with NAAQS values. The general conversion equation is

$$\mu g/m^3 = (ppb) * (12.187) * (M) / (273.15 + °C)$$

where *M* is the molecular weight of the gaseous pollutant (i.e., 46 gr/mol for NO_2). Assuming an ambient pressure of 1 atmosphere and a temperature of 25 degrees Celsius, the conversion factor for NO_2 concentrations is C(ppb) = C(μg/m^3) / 1.88

3.4 Assumptions

3.4.1 Facility and Equipment Operating Hours

The operating hours of the facility were assumed to be 24 hours a day. While a few vehicle trips could occur outside the business hours period, the peak-hour mobile source emissions were assumed, very conservatively, to occur for the entire 24-hour during each day. On-site combustion emissions from natural gas sources could occur at any time during a 24-hour day.

3.4.2 On-site Equipment

- Heater emissions during all hours of the 24-hour day will occur up to the full MMBtu/hr rating assumed for emissions (i.e., 1.6 MMBtu/hr). This assumption is very conservative because space heaters will not be operating at full rating all of the time.
- Since Table 3.3.1 in AP-42 Section 3.3 only provides PM_{10} emission factors for fire pump and emergency backup power system, it was assumed that $PM_{2.5}$ and PM_{10} emission factors were equal.
- The building heating, ventilation, and air-conditioning (HVAC) units will be natural gas-fired and will generate on-site emissions due to the burning of natural gas.

3.4.3 Mobile-Source Emissions

- Based on the Trip Generation estimates in the Traffic Impact Study, truck operations on site are expected to remain consistent with existing conditions, only relocated to the east side of the building. Therefore, 100% of the vehicles will be passenger cars.
- MOVES source type "Passenger Car" accurately represents Project passenger car.
- Workers and visitors were assumed to drive gasoline-powered passenger cars traveling on unrestricted urban roads in Project year 2028 and later.
- Passenger cars will idle for a maximum of 5 minutes on-Site.

3.4.4 AERMOD

- Roadway link lengths were based on distances in Site Plan and Google Earth. It was also assumed that roadway links going outside the Site Plan are extended for 0.5 mile.
- On-Site travel of passenger vehicles will occur over the full north-south length of the east side of the property, the full east-west length of the north side of the property, and the north most corner on the west side of the property and is over approximately 1,063 feet. On-Site travel of trucks will occur only over approximately 405 feet of the north-south length of the parking lot on the west side of the property.
- Six 15m-by-15m area sources were used to model off-network idle links that represent vehicle idling emissions from passenger cars. These links were located at Kilbourn Avenue / Ferdinand Street;

Kilbourn Avenue / North Car Access; Kilbourn Avenue / Parking Lot Access/South Car Access; Ferdinand Street / Truck Exit; Fleet Management Driveway / Ferdinand Street; and Kilbourn Avenue / Chicago Avenue. One 30m-by-15m area source was used to model off-network idle link (i.e., Link 39) that represents vehicle idling emissions from passenger cars. This link was located at Kilbourn Avenue / Lake Street.

- Area sources were used to model off-network idle links that represent on-Site off-network idling of passenger cars in the parking lot(s) (45 meter length and 16 meter width).
- For NO_2 modeling, the ARM2 option was chosen with a default NO_2/NOX in-stack ratio (ISR) of minimum 0.5 and maximum 0.9 following USEPA guidance (USEPA 2017).
- Project-generated traffic was assumed to operate 24 hours a day and 7 days a week.
- The average passenger vehicle height will be 1.5 meters.
- Mobile vehicle emissions while traveling and while idling were modeled as area sources in AERMOD.
- Urban dispersion coefficient with a population of 2,700,000 was chosen (US Census 2019).

4. Results and Discussion

AERMOD was setup to allow the evaluation of stationary sources on-Site and vehicle activity-related emissions for the maximum 1-hour average and the maximum annual-average NO_2 concentrations, the maximum 24-hour average and the maximum annual-average PM_{10} concentrations, and 24-hour average and maximum annual-average $PM_{2.5}$ concentrations. The modeling results are presented in the following sections.

4.1 Modeling Results

The air dispersion modeling results and corresponding figures that graphically summarize the modeling results are described below. **Table 8** summarizes the modeled value and Post-Development Impact concentrations for each pollutant and averaging period compared with NAAQS. As Shown in **Table 8**, predicted concentrations as a result of Site operation are relatively small compared to the background concentrations and the pollutant concentrations do not exceed National Ambient Air Quality Standards (NAAQSs). Among the pollutants and averaging periods, highest 1-hour average NO_2 concentration had the highest increase, but still well below the NAAQS.

Figure 8 through **Figure 12** show the contour maps of predicted highest pollutant concentrations for each averaging period. The location and value of the highest predicted concentration is shown in each figure. In terms of the location of the highest predicted concentration increase, as expected, highest increase in the pollutant concentrations would occur along the perimeter of the Site. However, these higher predicted impacts rapidly drop off within a few meters further away from the Site perimeter. AERMOD Model Electronic Run Files are included in **Appendix G**.

Table 8 Post-Development Impact for each Pollutant and Averaging Period compared with NAAQS

Pollutant	Averaging Period	Modeled Value	Design Values	Post-Development Impact		NAAQS	Unit
NO_2	1-Hour	66.5*	CDPH Table	**66.5**	<	**100**	ppb
	Annual	1.5	18.1	**19.6**	<	**53**	ppb
PM_{10}	24-Hour	1.2	102	**103.2**	<	**150**	µg/m^3
$PM_{2.5}$	24-Hour	0.1	24	**24.1**	<	**35**	µg/m^3
	Annual	0.2	10	**10.2**	<	**12**	µg/m^3

Notes:
- Modeled values were derived from AERMOD and are reported to one decimal place beyond the NAAQS value.
- Background concentrations are reported to one decimal place beyond the NAAQS value.
- Design values and Post-Development Impact values are rounded to nearest 0.1 µg/m3 for PM_{10} and $PM_{2.5}$ or ppb for NO_2 (USEPA, 2015)

* Modeled value includes background concentrations (Design Values) and should be directly compared with NAAQS.

4.1.1 1-hour NO_2

Figure 8 shows the highest 1-hour average NO_2 concentration predictions resulted from the proposed development project (i.e., modeled receptor value). With the CDPH-provided seasonal hourly background concentrations entered in the model, the modeled values include the background concentrations (i.e., design values) and therefore the 1-hour NO_2 Post-Development Impact was equal to the modeled receptor value. The resulting 1-hour NO_2 Post-Development Impact concentration was then rounded to the nearest 0.1 µg/m^3 (USEPA, 2015). 1-hour NO_2 Post-Development Impact of 66.5 ppb is less than the 1-hour NO_2 NAAQS (100 ppb). This demonstrates that the proposed development project would not contribute to any new local violations, increase the frequency or severity of any existing violation, or delay timely attainment of the NO_2 NAAQS. Therefore, the proposed development project will not cause an exceedance of the 1-hour NO_2 NAAQS.

4.1.2 Annual NO_2

Figure 9 shows the highest annual average NO_2 concentration predictions resulted from the proposed development project (i.e., modeled receptor value). The annual NO_2 Post-Development Impact was calculated by adding the modeled receptor value to the design value (USEPA, 2015). The resulting annual NO_2 Post-Development Impact concentration was then rounded to the nearest 0.1 µg/m^3 (USEPA, 2015). The annual NO_2 Post-Development Impact of 19.6 ppb is less than the annual NO_2 NAAQS (53 ppb). This demonstrates that the proposed development project would not contribute to any new local violations, increase the frequency or severity of any existing violation, or delay timely attainment of the NO_2 NAAQS. Therefore, the proposed development project will not cause an exceedance of the NO_2 NAAQS.

4.1.3 24-hour PM_{10}

Figure 10 shows the highest 24-hour average PM_{10} concentration predictions resulted from the proposed development project (i.e., modeled receptor value). The 24-hour PM_{10} Post-Development Impact was calculated by adding the modeled receptor value to the design value (USEPA, 2015). The resulting 24-hour PM_{10} Post-Development Impact concentration was then rounded to the nearest 10 micrograms per cubic meter (µg/m^3) (USEPA, 2015). The 24-hour PM_{10} Post-Development Impact of 103.2 µg/m^3 are less than the 24-hour PM_{10} NAAQS (150 µg/m^3). This demonstrates that the proposed development project would not contribute to any new local violations, increase the frequency or severity of any existing violation, or delay timely attainment of the PM_{10} NAAQS. Therefore, the proposed development project will not cause an exceedance of the PM_{10} NAAQS.

4.1.4 24-hour $PM_{2.5}$

Figure 11 shows the highest 24-hour average $PM_{2.5}$ concentration predictions resulted from the proposed development project (i.e., modeled receptor value). The 24-hour $PM_{2.5}$ Post-Development Impact was calculated by adding the modeled receptor value to the design value (USEPA, 2015). The resulting 24-hour $PM_{2.5}$ Post-Development Impact concentration was then rounded to the nearest 1 µg/m^3 (USEPA, 2015). The 24-hour $PM_{2.5}$ Post-Development Impact of 24.1 µg/m^3 are less than the 24-hour $PM_{2.5}$ NAAQS (35 µg/m^3). This demonstrates that the proposed development project would not contribute to any new local violations, increase the frequency or severity of any existing violation, or delay timely attainment of the 24-hour $PM_{2.5}$ NAAQS. Therefore, the proposed development project will not cause an exceedance of the 24-hour $PM_{2.5}$ NAAQS.

4.1.5 Annual $PM_{2.5}$

Figure 12 shows the highest annual average $PM_{2.5}$ concentration predictions resulting from the proposed development project (i.e., modeled receptor value). The annual $PM_{2.5}$ Post-Development Impact was calculated by adding the modeled receptor value to the design value (USEPA, 2015). The resulting annual $PM_{2.5}$ Post-Development Impact concentration was then rounded to the nearest 0.1 µg/m^3 (USEPA, 2015). The annual $PM_{2.5}$ Post-Development Impact of 10.2 µg/m^3 is less than the annual $PM_{2.5}$ NAAQS (12 µg/m^3). This demonstrates that the proposed development project would not contribute to any new local violations, increase the frequency or severity of any existing violation, or delay timely attainment of the annual $PM_{2.5}$ NAAQS. Therefore, the proposed development project will not cause an exceedance of the annual $PM_{2.5}$ NAAQS.

4.2 Interpretation of Model Predictions

The model predictions indicate the potential impacts from stationary and mobile sources related to the activities after the proposed development project is completed and the Site is operational will be negligible and therefore will not lead to localized exceedances of the NAAQS for NO_2, PM_{10} and $PM_{2.5}$. The estimates may reflect conservative assumptions regarding vehicle utilization and facility-related activities.

Chicago, like many urban areas, has many emission sources of air pollutants that contribute to significant background concentrations of NO_2, PM_{10} and $PM_{2.5}$. Data from the 2020 Illinois Air Quality Report (IEPA, 2020) indicates background concentrations are close to the levels of the National Ambient Air Quality Standards (NAAQS).

Predicted concentrations generally decrease rapidly with distance from the Site boundary, a characteristic of the dispersion of emissions from a ground-level source. The AP42-based value for the space heaters is based on assumption that the heater units run 24 hours per day for 365 days a year and may greatly overestimate actual emissions. The heaters may not run all the time throughout the entire day or certain seasons (e.g., summer).

The highest 1-hour average NO_2 concentration reaches as high as 66.5 ppb with the seasonal hourly background concentration (below the NAAQS of 100 ppb). The highest annual average NO_2 concentration is of the order of 19.6 ppb (below the allowable NAAQS of 53 ppb). The highest 24-hour average PM_{10} concentration of 103.2 µg/m^3 is also below the NAAQS of 150 µg/m^3. The highest 24-hour average $PM_{2.5}$ concentration reaches as high as 24.1 µg/m^3 (below the NAAQS of 35 µg/m^3). The highest annual average $PM_{2.5}$ concentration is of the order of 10.2 µg/m^3 (below the allowable NAAQS of 12 µg/m^3).

References

CDPH, 2021. Air Quality Impact Evaluation Interim Guidance, prepared by Chicago Department of Public Health (CDPH), September 2021

DPH, 2022. Procedure for Calculating Emissions Using the MOVES Lookup Tables and accompanying Excel Tables, Chicago Department of Public Health, March 2022.

IEPA, 2020. Illinois Annual Air Quality Report, Air Quality Index 2020, prepared by State of Illinois Environmental Protection Agency, Bureau of Air.

Kimley-Horn, 2022. Traffic Impact Study, Chicago Beverage Systems Expansion, Chicago, Illinois, prepared by Kimley-Horn and Associates, Inc. (Kimley-Horn) on, prepared for Reyes Holdings, LLC, September 15, 2022

USEPA 1998. AP-42, Fifth Edition, Volume I, Chapter 1, Section 1.4: External Combustion Sources – Natural Gas Combustion, US Environmental Protection Agency, July 1998. Available at: www3.epa.gov/ttn/chief/ap42/ch01/final/c01s04.pdf.

USEPA, 2015. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas, Transportation and Climate Division, Office of Transportation and Air Quality, U.S. Environmental Protection Agency, EPA-420-B-15-084, November 2015

USEPA 2017. Guideline on Air Quality Models, "Appendix W" to 40 CFR Part 51, US Environmental Protection Agency, January 17, 2017. Available at: www.epa.gov/scram/clean-air-act-permit-modeling-guidance.

USEPA 2020. Air Quality Design Value Reports, US Environmental Protection Agency, 2020. Available at: www.epa.gov/air-trends/air-quality-design-values.

USEPA 2021a. MOVES3 Motor Vehicle Emissions Model for Emissions Inventories in SIP and Transportation Conformity, US Environmental Protection Agency, January 7, 2021. Available at: www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves#guidance.

USEPA 2021b. AERMOD Modeling System, US Environmental Protection Agency, Version 21112.

USEPA 2021c. AQS Monitor Value Reports, US Environmental Protection Agency, Accessed Sept. 2021. Available at: www.epa.gov/outdoor-air-quality-data/monitor-values-report.

FIGURES

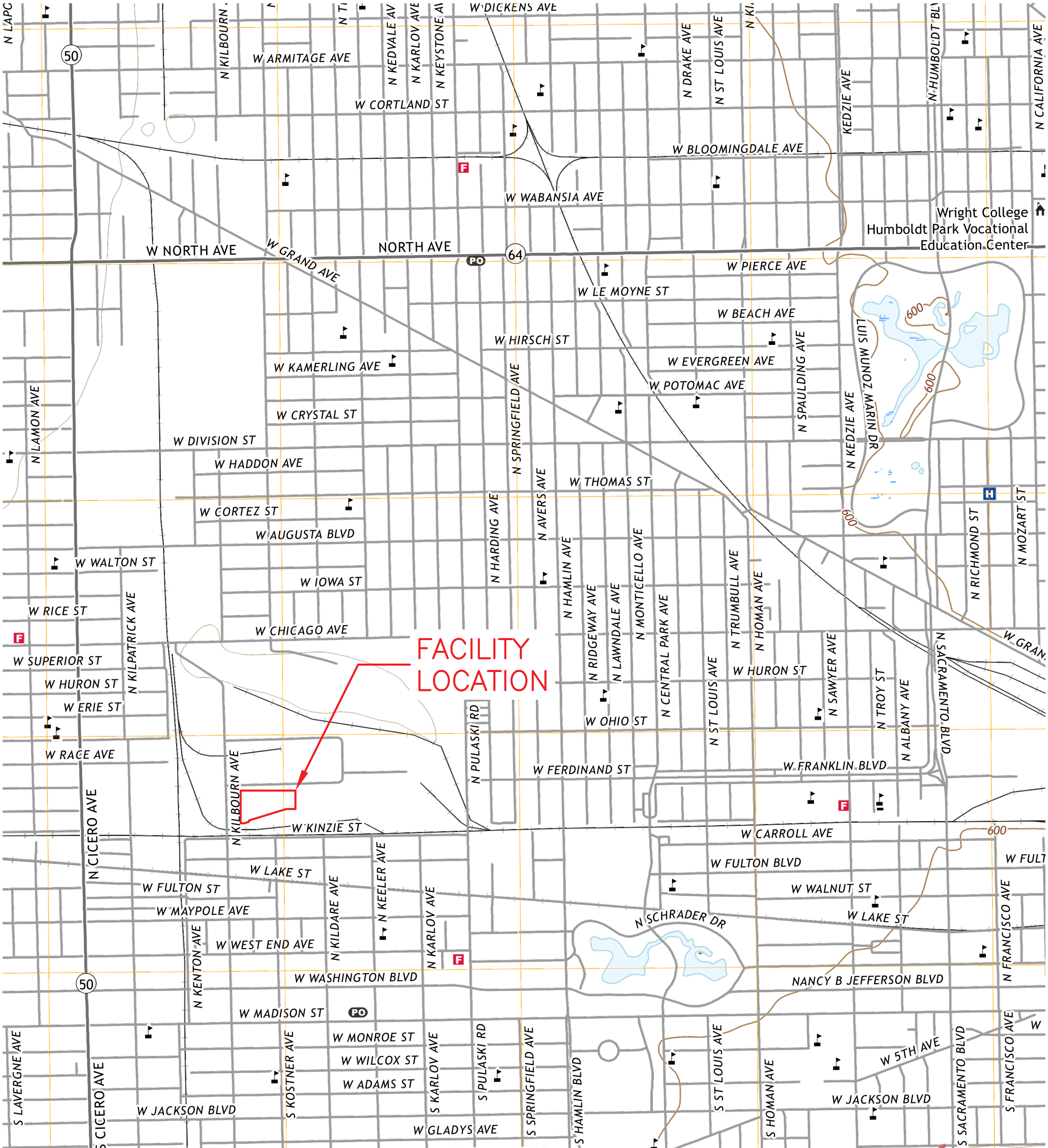

IMAGE SOURCE: USGS US TOPO 7.5-MINUTE MAP FOR CHICAGO LOOP, IL 2021: USGS – NGTOC.

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2000' 0 2000'

Title:

Site Location Map

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

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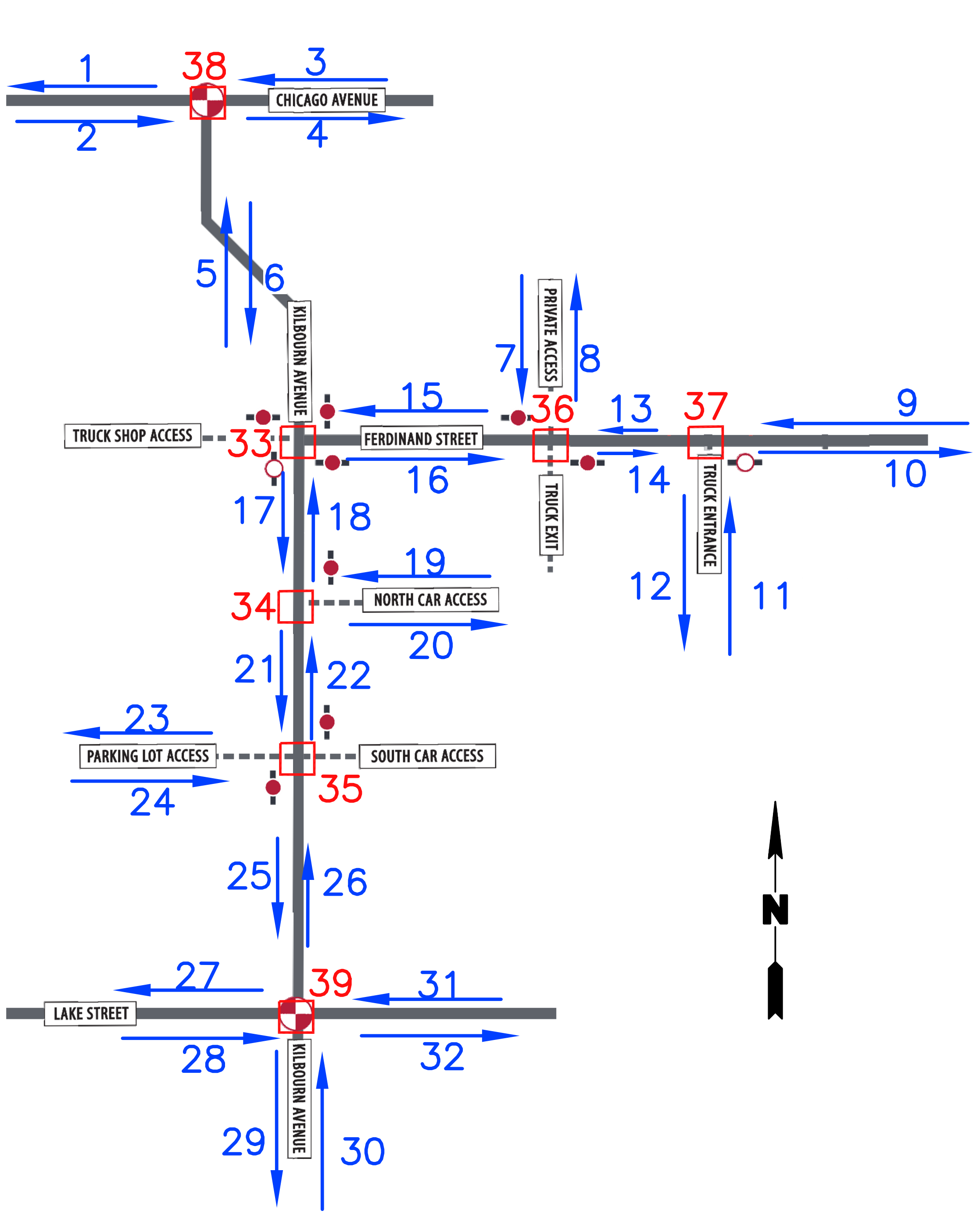

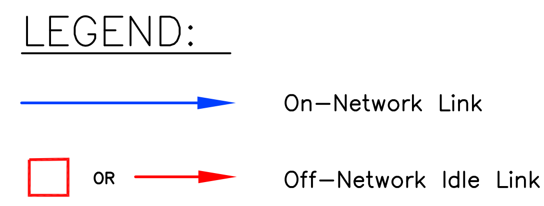

Title: **Location of MOVES/AERMOD links**

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX	Compiled by: JS	Date: 10/28/2022	FIGURE
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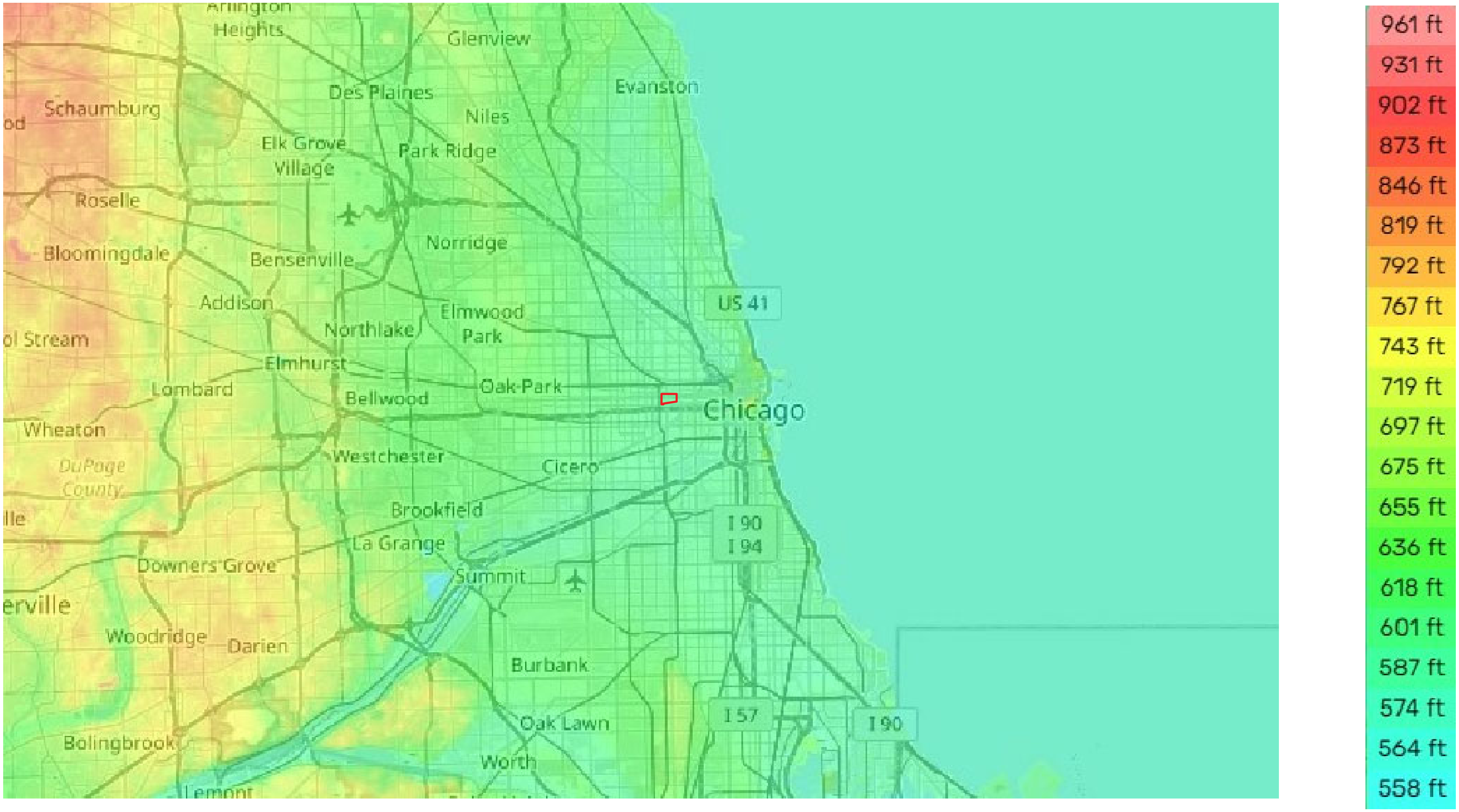

Chicago, Cook County, Illinois, United States

N

Source: https://en-us.topographic-map.com/maps/ncg/Chicago/

Title: **Local Topography of the Area Surrounding the Site**		
4239 West Ferdinand Street, Chicago, IL		
Prepared for: Ryan Companies US, Inc.		
Compiled by: JS	Date: 10/28/2022	FIGURE 3
Prepared by: JS	Scale: NOT TO SCALE	
Project Mgr: MS	Project: 3977.0002I000	
File: 4239 W FERDINAND_FIGURES.DWG		

ROUX

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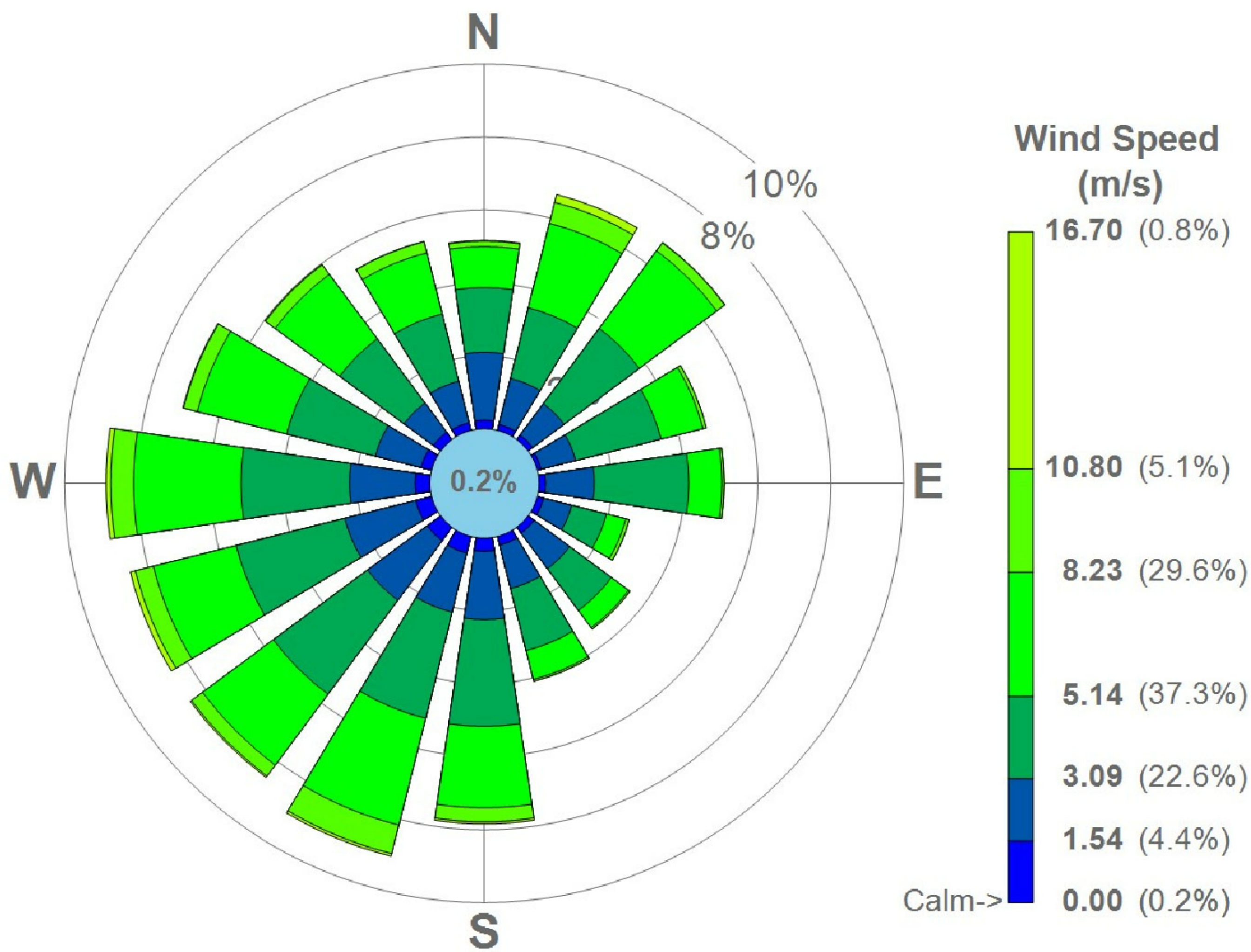


N

Title:

Windrose for O'Hare Chicago IL Station for the Time Period January 1, 2016 - December 31, 2020

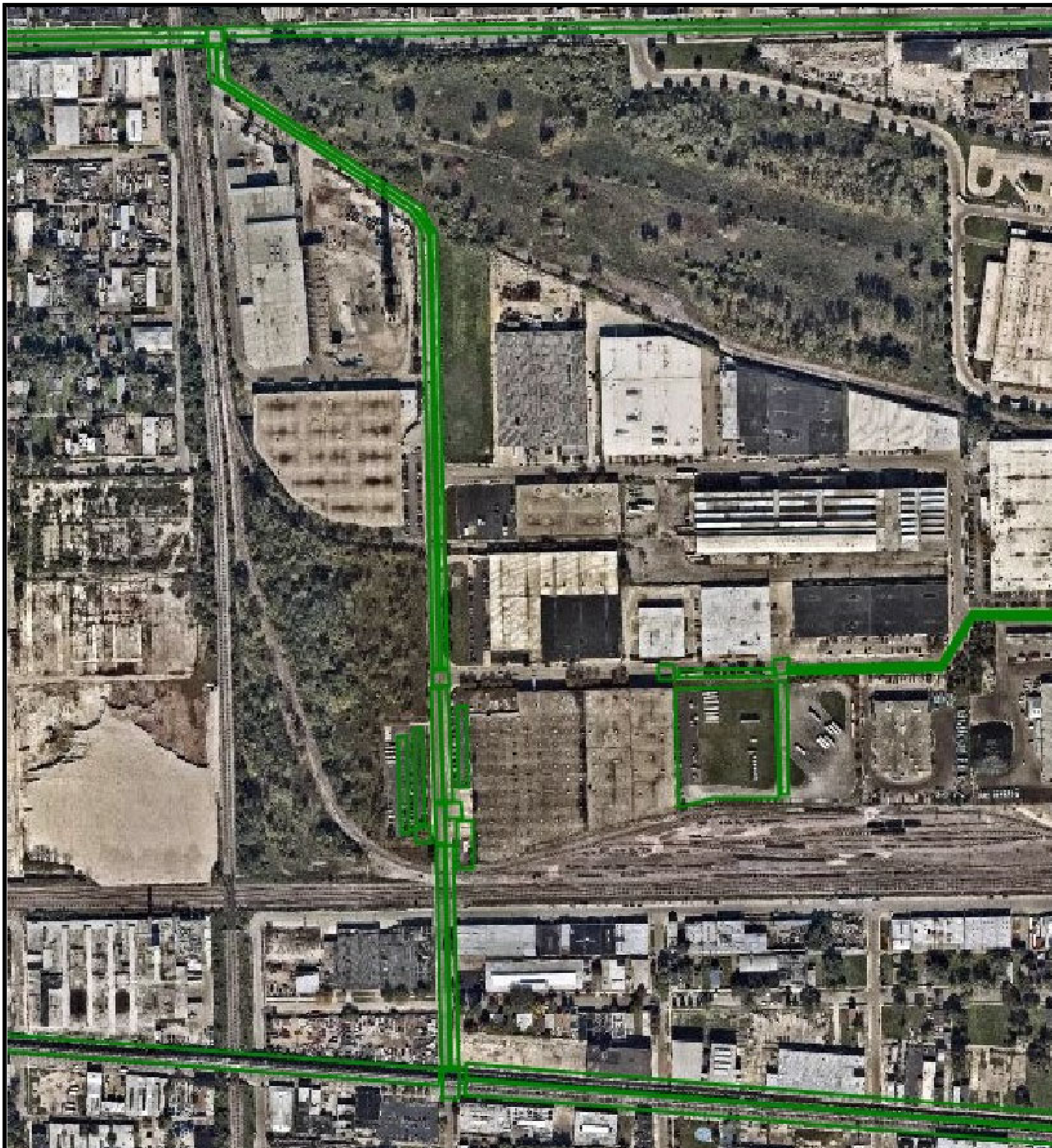
4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

Compiled by: JS	Date: 10/31/2022	FIGURE
Prepared by: JS	Scale: NOT TO SCALE	4
Project Mgr: MS	Project: 3977.0002I000	
File: 4239 W FERDINAND_FIGURES.DWG		



LEGEND:

Source Area

N

400' 0 400'

Title:

AERMOD Source Layout

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX	Compiled by: JS	Date: 10/31/2022	FIGURE
	Prepared by: JS	Scale: AS SHOWN	5
	Project Mgr: MS	Project: 3977.0002I000	
	File: 4239 W FERDINAND_FIGURES.DWG		

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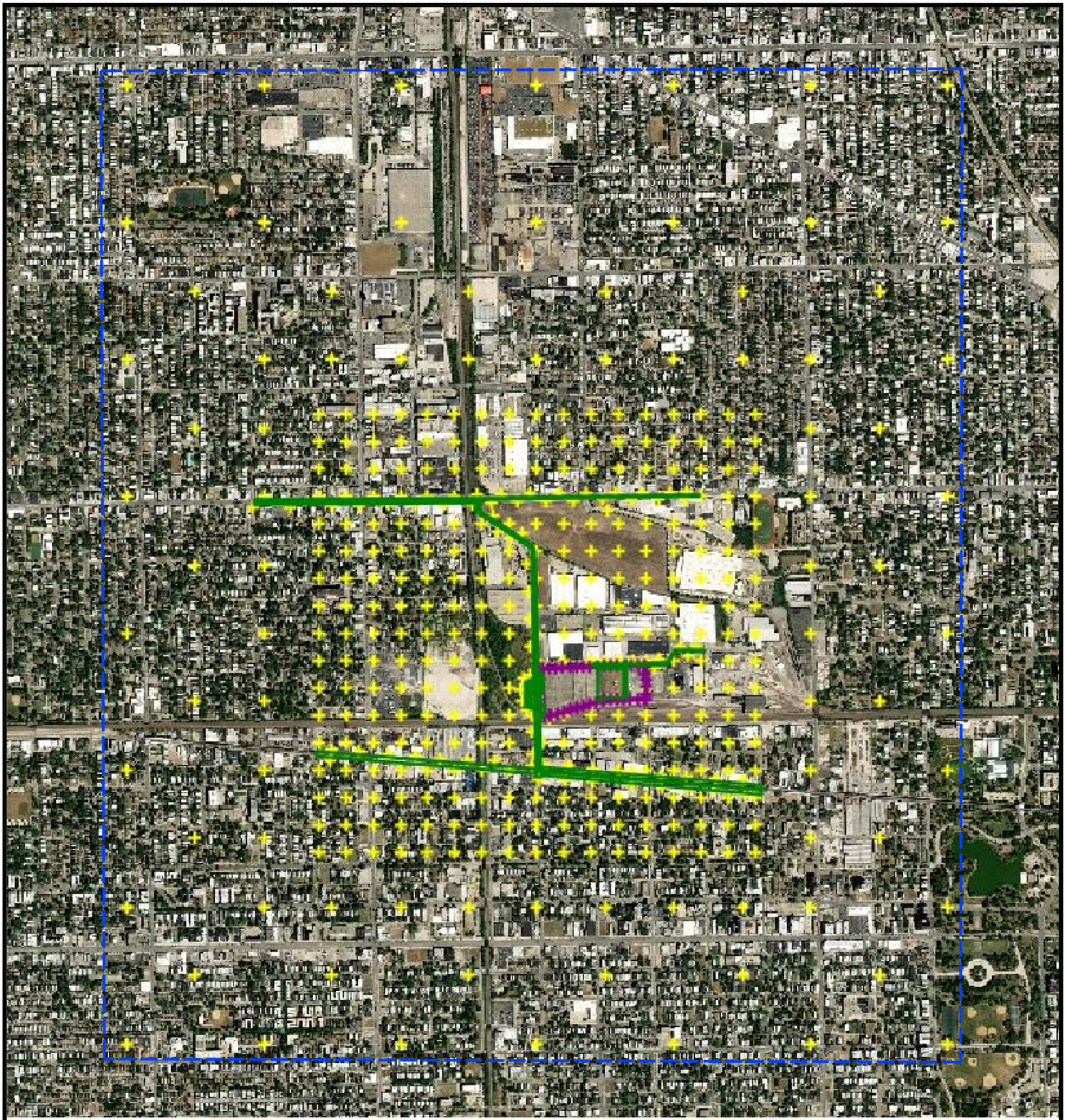

LEGEND:

+ + + + + AERMOD Discrete Receptors

AERMOD Boundary Receptors

Source Area

AERMOD Modeling Domain

N

1500'   0   1500'

Title:

AERMOD Modeling Domain and Receptor Network

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

Compiled by: JS	Date: 06/20/2022	FIGURE
Prepared by: JS	Scale: AS SHOWN	6
Project Mgr: MS	Project: 3977.0002I000	
File: 4239 W FERDINAND_FIGURES.DWG		

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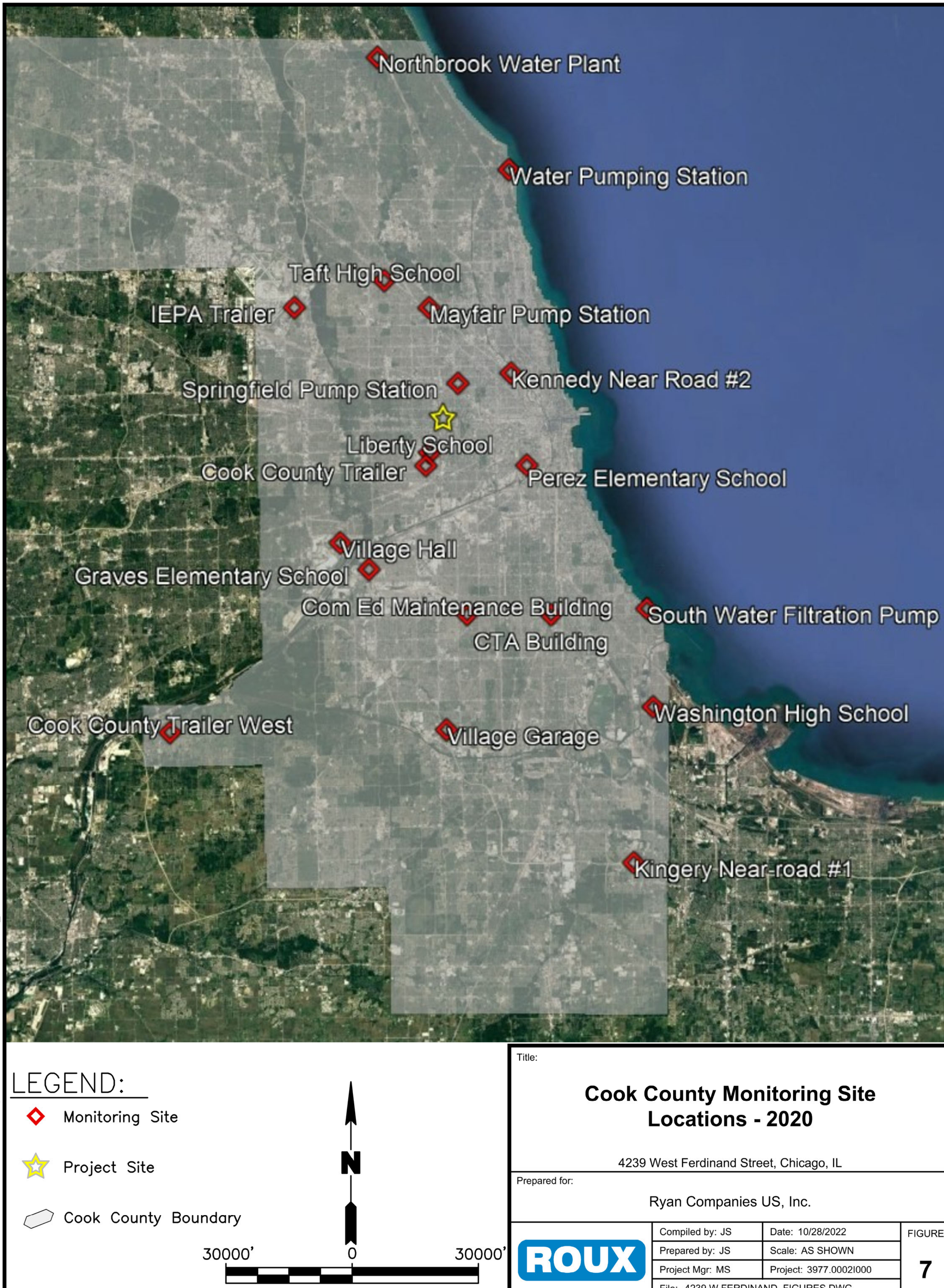

Title:

Cook County Monitoring Site Locations - 2020

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

Compiled by: JS	Date: 10/28/2022	FIGURE
Prepared by: JS	Scale: AS SHOWN	7
Project Mgr: MS	Project: 3977.0002I000	
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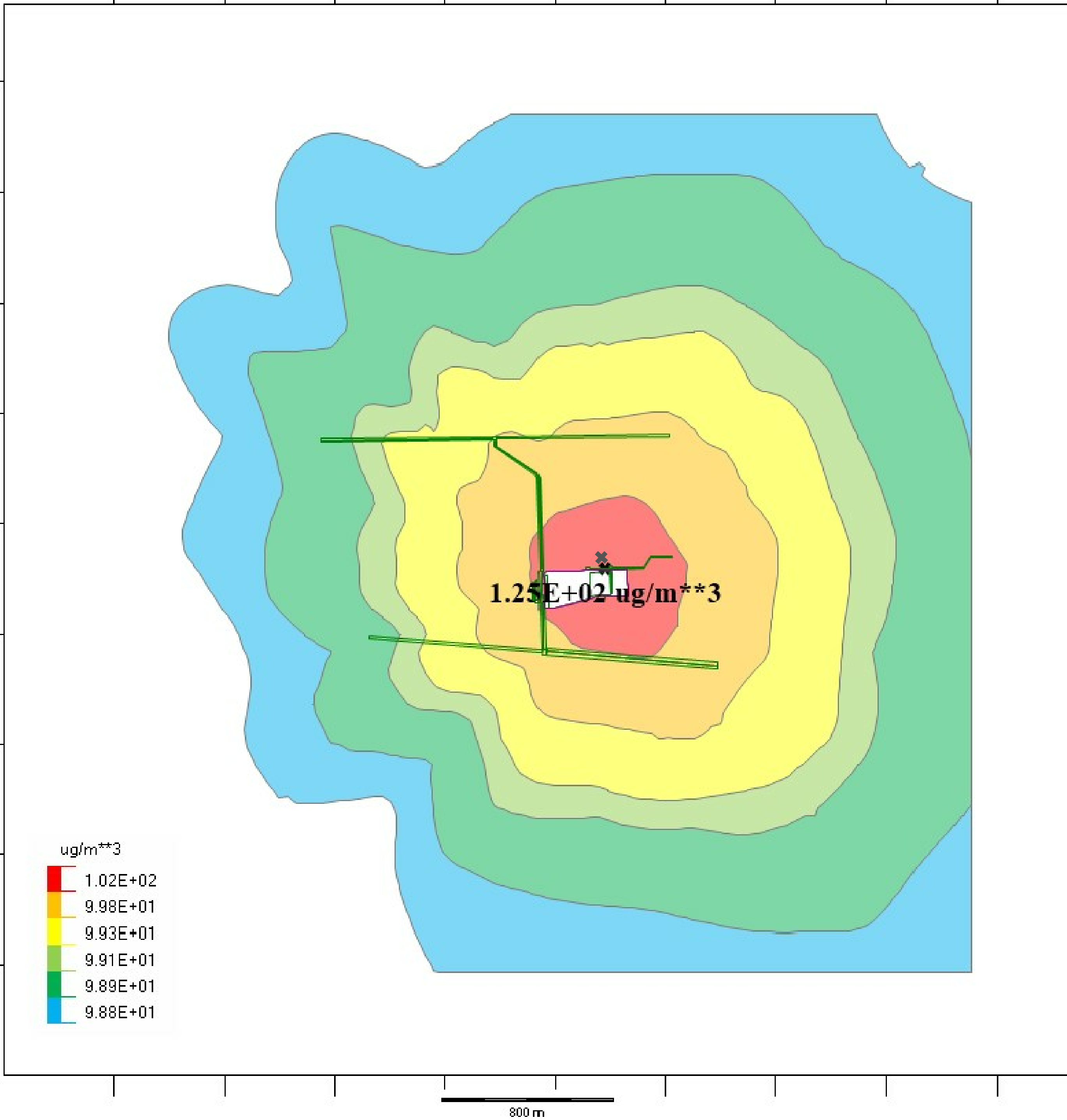

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Title:

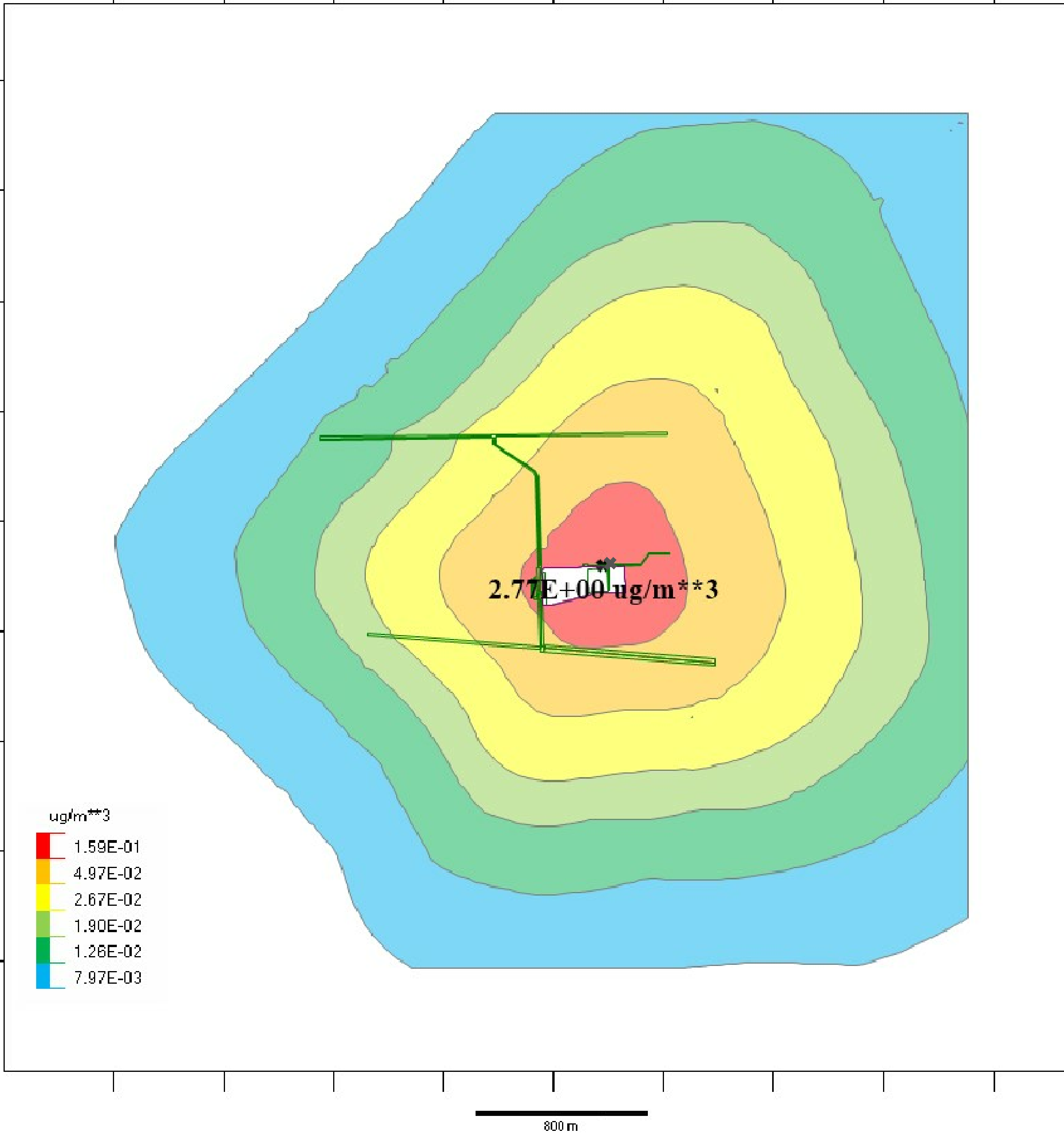
Highest 1-Hour Average NO_2 Concentration Predictions with Seasonal Hourly Background

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX	Compiled by: JS	Date: 10/31/2022	FIGURE
	Prepared by: JS	Scale: AS SHOWN	8
	Project Mgr: MS	Project: 3977.0002I000	
	File: 4239 W FERDINAND_FIGURES.DWG		



Title:

Highest Annual Average NO2 Concentration Predictions (Without Background)

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

Compiled by: JS	Date: 10/31/2022	FIGURE
Prepared by: JS	Scale: AS SHOWN	9
Project Mgr: MS	Project: 3977.0002I000	
File: 4239 W FERDINAND_FIGURES.DWG		

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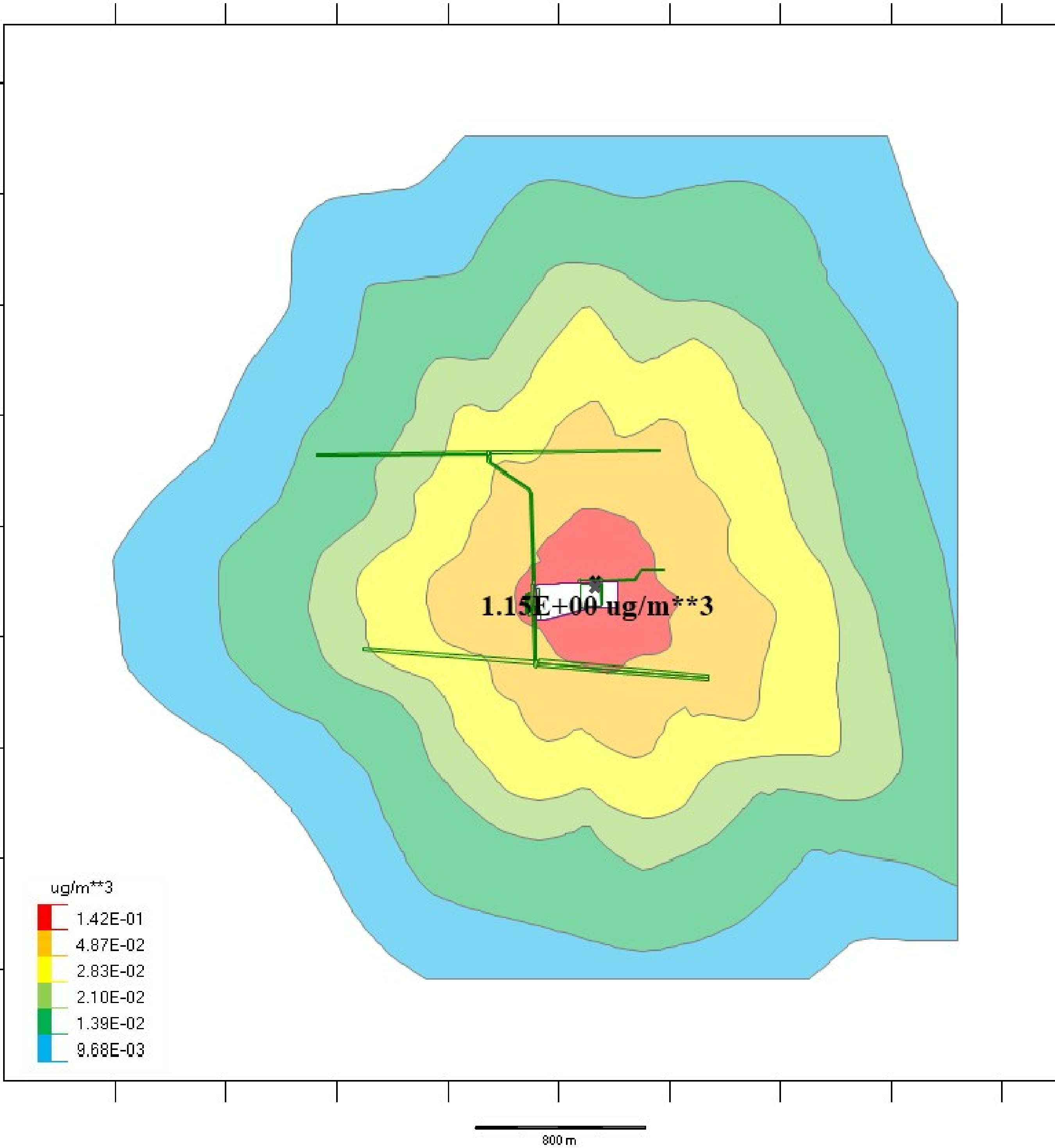

Title:

Highest 24-Hour Average PM10 Concentration Predictions

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

Compiled by: JS	Date: 10/31/2022	FIGURE
Prepared by: JS	Scale: AS SHOWN	10
Project Mgr: MS	Project: 3977.0002I000	
File: 4239 W FERDINAND_FIGURES.DWG		

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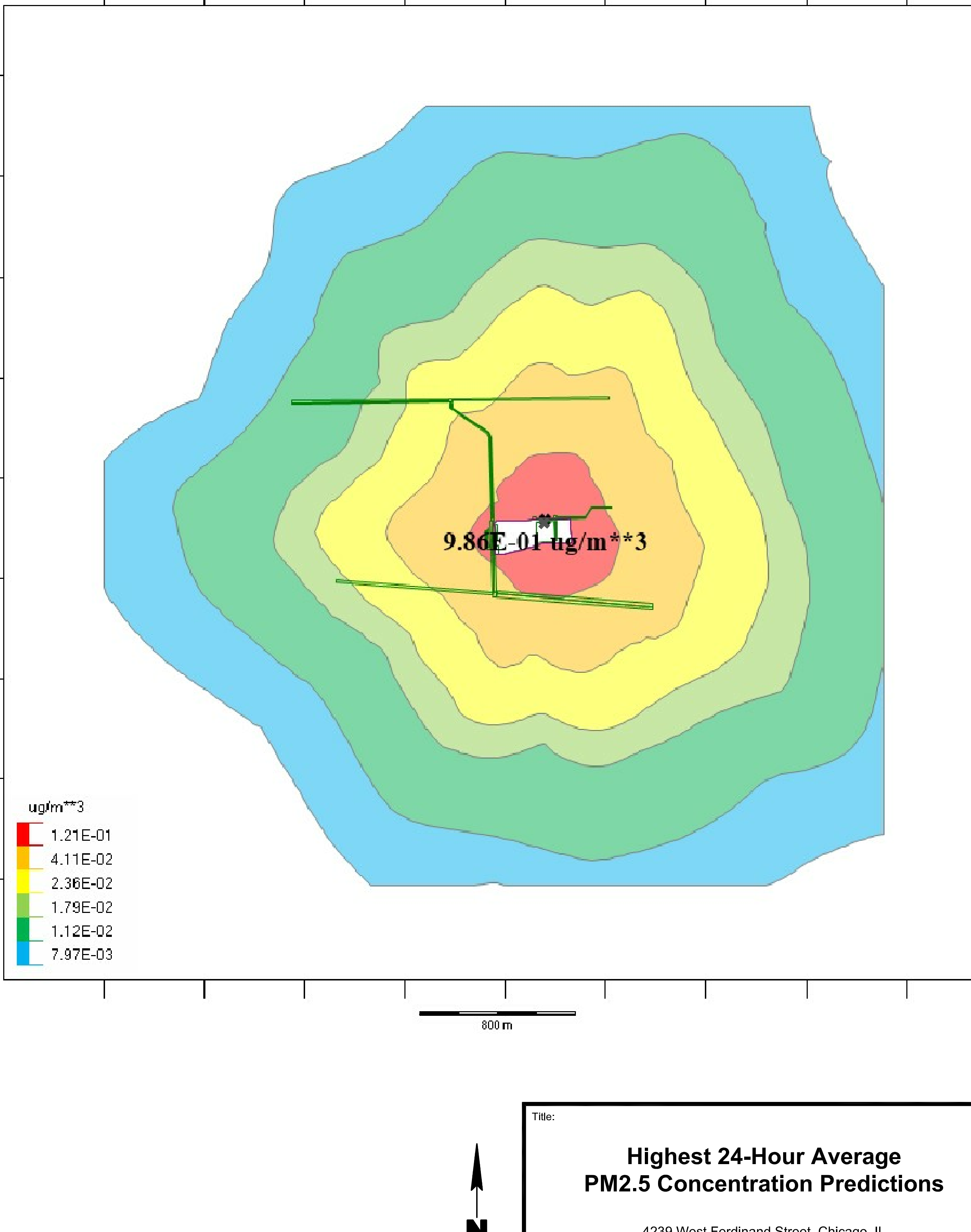

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Title:

Highest 24-Hour Average PM2.5 Concentration Predictions

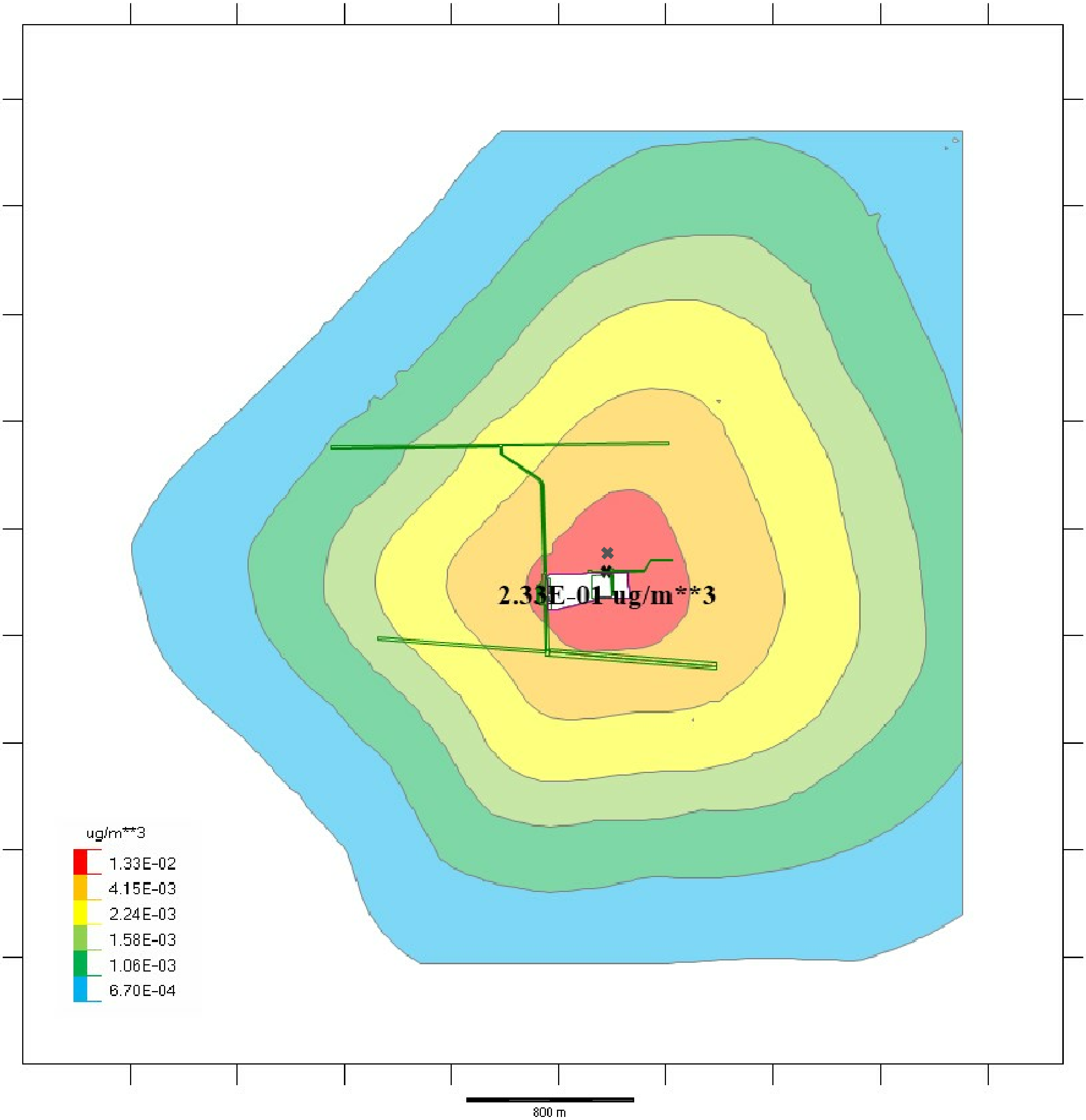
4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX

Compiled by: JS	Date: 10/31/2022	FIGURE
Prepared by: JS	Scale: AS SHOWN	11
Project Mgr: MS	Project: 3977.0002I000	
File: 4239 W FERDINAND_FIGURES.DWG		



N

Title:

Highest Annual Average PM2.5 Concentration Predictions

4239 West Ferdinand Street, Chicago, IL

Prepared for:

Ryan Companies US, Inc.

ROUX	Compiled by: JS	Date: 10/31/2022	FIGURE
	Prepared by: JS	Scale: AS SHOWN	12
	Project Mgr: MS	Project: 3977.0002I000	
	File: 4239 W FERDINAND_FIGURES.DWG		

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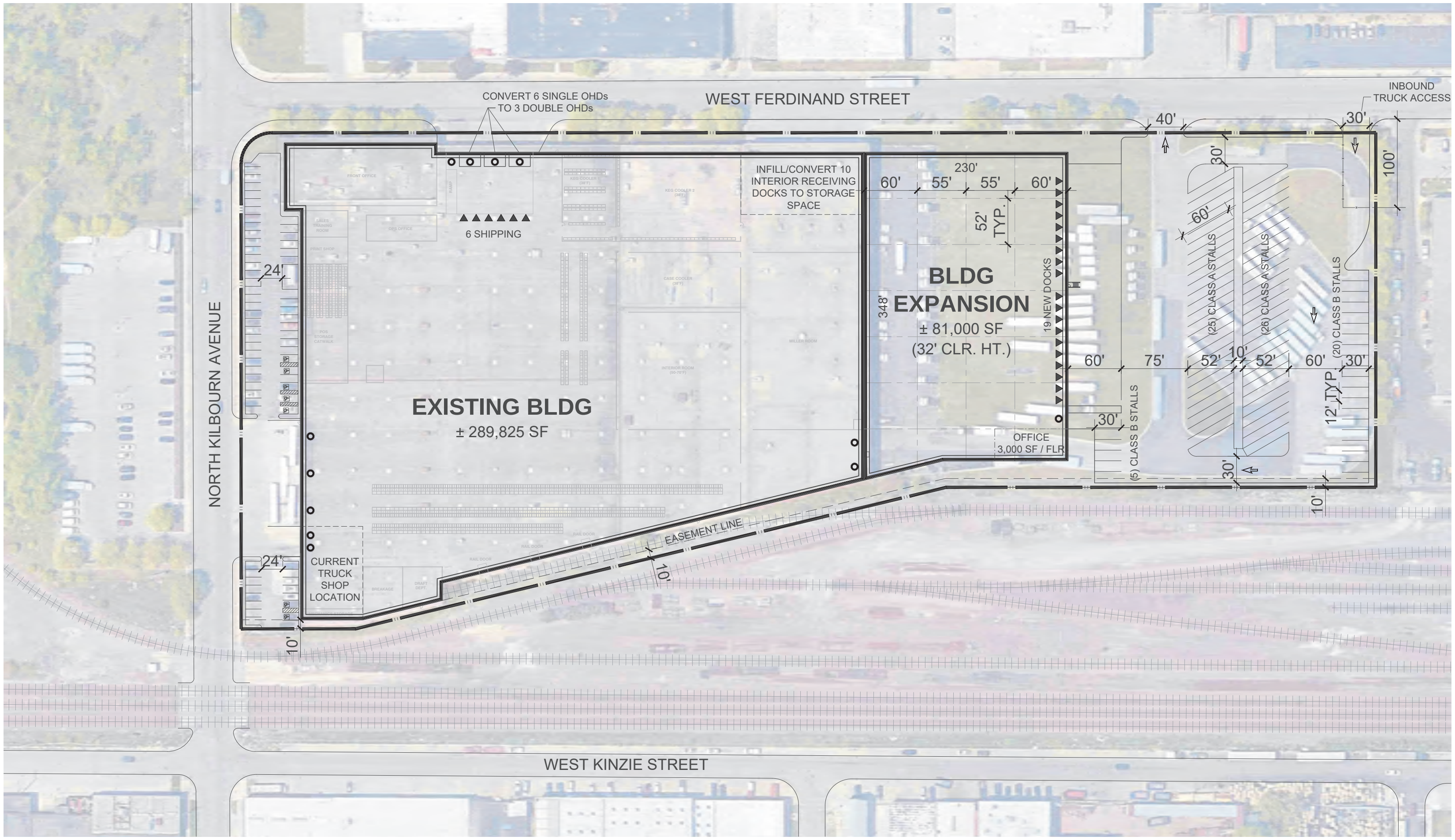
APPENDICES

APPENDIX A

Proposed Site Plan



PROJECT DATA:	
SITE AREA:	
GROSS:	13.44 AC
EXISTING BLDG:	±289,825 SF
NEW BLDG ADDITION:	81,000 SF
TOTAL BLDG AREA:	370,825 SF
COVERAGE:	
GROSS:	63%
PARKING PROVIDED:	
AUTO:	67 STALLS @0.18/1000 SF
REQ. ACCESSIBLE	*3 STALLS*
CLASS B	25 STALLS
CLASS A	51 STALLS
TRUCK DOCKS:	
▲ DOCK-HIGH DOORS	25
O GRADE-LEVEL DOORS	10

EXISTING FLOOR AREA RATIO (F.A.R.) .5

NEW FLOOR AREA RATIO (F.A.R.) .63

This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

Stormwater Management Design: AVERAGE REGIONAL REQUIRED PROVIDED

Boundary Source: GIS MAP & AERIAL IMAGE

1" = 50'

0 25 50 100 250

NORTH

scheme: 04

Existing Site Plan

4239 West Ferdinand Street
Chicago, IL 60624

WARE MALCOMB

CHD22-0011-00
05.18.2022

SHEET 1

APPENDIX B

Stationary Source Emission Calculations

Parameter	Value	Units	Reference
Space Heater	1.6	MMBTU/hr	-
Facility Area	81,000	ft2	Site Plan
# of Space Heaters	1	-	-
Heating requirement for space	1.6	MMBTU/hr	-
Heating requirement for space	0.00157	MMSCF/hr	-
NOx Emission Factor (Uncontrolled)	100	lb/MMSCF	Table 1.4.1
PM10 Emission Factor (Uncontrolled)	7.6	lb/MMSCF	Table 1.4.2
PM2.5 Emission Factor (Uncontrolled)	7.6	lb/MMSCF	Table 1.4.2

Note:

MM = million

1 SCF = 1020 BTU

Combustor Type = Small Boiler (<100 MMBtu/hr Heat Input)

Parameter	Units	Nox	PM10	PM2.5
EF (Uncontrolled)	lb/MMSCF	100	7.6	7.6
Emissions (Uncontrolled)	lb/hr	0.1569	0.0119	0.0119
Emissions (Uncontrolled)	gr/sec	0.019765	0.001502	0.001502
Emissions (Uncontrolled)	g/(s.m2)	2.63E-06	2.00E-07	2.00E-07

Note:

EF = Emission Factor

Assumptions:

100% heater rating usage for 24/7, 365 days/yr

Climate zone 5:

https://basc.pnnl.gov/images/iecc-climate-zonemap

https://www.energy.gov/sites/default/files/2015/10/f27/ba_climate_region_guide_7.3.pdf

PM2.5 and PM10 emission factors were assumed to be equal to toal PM

Parameter	Value	Units	Reference
Emergency backup power generator	100	KW	-
# of emergency backup power generators	1	-	-
Total emergency backup power	100	KW	-
Total emergency backup power	134.00	hp	-
Running time	500	hr/year	-
NOx Emission Factor (Uncontrolled)	0.031	lb/(hp-hr)	Table 3.3.1
PM10 Emission Factor (Uncontrolled)	2.20E-03	lb/(hp-hr)	Table 3.3.1
PM2.5 Emission Factor (Uncontrolled)	2.20E-03	lb/(hp-hr)	Table 3.3.1

Note:

1 KW = 1.34 hp

Parameter	Units	Nox	PM10	PM2.5
EF (Uncontrolled)	lb/(hp-hr)	0.031	2.20E-03	2.20E-03
Emissions (Uncontrolled)	lb/yr	2077.0000	147.4000	147.4000
Emissions (Uncontrolled)	gr/sec/m2	3.69E-07	2.62E-08	2.62E-08

Note:

EF = Emission Factor

Assumptions:

Total annual operating hours = 500 hrs/yr for the maximum allowable hours of operation for an emergency generator

PM2.5 and PM10 emission factors were assumed to be equal to toal PM

Engines < 600 Hp

Parameter	Value	Units	Reference
Fire pumps	50	hp	-
# of fire pumps	1	-	-
Total fire pumps power	50	hp	-
Running time	500	hr/year	-
NOx Emission Factor (Uncontrolled)	0.031	lb/(hp-hr)	Table 3.3.1
PM10 Emission Factor (Uncontrolled)	2.20E-03	lb/(hp-hr)	Table 3.3.1
PM2.5 Emission Factor (Uncontrolled)	2.20E-03	lb/(hp-hr)	Table 3.3.1

Parameter	Units	Nox	PM10	PM2.5
EF (Uncontrolled)	lb/(hp-hr)	3.10E-02	2.20E-03	2.20E-03
Emissions (Uncontrolled)	lb/yr	775.0000	55.0000	55.0000
Emissions (Uncontrolled)	gr/sec/m2	1.38E-07	9.77E-09	9.77E-09

Note:

EF = Emission Factor

Assumptions:

Total annual operating hours = 500 hrs per year for the maximum allowable hours of operation for fire pump

PM2.5 and PM10 emission factors were assumed to be equal to toal PM

Engines < 600 Hp

APPENDIX C

Summary of Mobile Source Link Input Parameters

On-Network Emissions

LinkID	Link Description (Road Name, Direction)	Link Length (ft)	Link Length (miles)	Link Width (m)	yearID	sourceTypeName	fuelTypeDesc	Volume (Peak Hour)	Total Vehicle-Miles per Peak Hour	Average Spreed (mph)	avgSpeedBin	NOx EF (g/mi)	PM10 EF (g/mi)	PM2.5 EF (g/mi)
1	Chicago Ave WB west of Kilbourn Ave	2640	0.5	8	2028	Passenger Car	Gasoline	5	2.500	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
2	Chicago Ave EB west of Kilbourn Ave	2640	0.5	8	2028	Passenger Car	Gasoline	10	5.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
3	Chicago Ave WB east of Kilbourn Ave	2640	0.5	8	2028	Passenger Car	Gasoline	5	2.500	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
4	Chicago Ave EB east of Kilbourn Ave	2640	0.5	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
5	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	2322	0.439772727	8	2028	Passenger Car	Gasoline	10	4.398	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
6	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	2322	0.439772727	8	2028	Passenger Car	Gasoline	5	2.199	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
7	Pricate Access SB north of Fedinand St	528	0.1	8	2028	Passenger Car	Gasoline	0	0.000	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
8	Pricate Access NB north of Fedinand St	528	0.1	8	2028	Passenger Car	Gasoline	0	0.000	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
9	Fedinand St WB east of Truck Entrance	1056	0.2	8	2028	Passenger Car	Gasoline	5	1.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
10	Fedinand St EB east of Truck Entrance	1056	0.2	8	2028	Passenger Car	Gasoline	5	1.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
11	Truck Entrance SB	350	0.066287879	8	2028	Passenger Car	Gasoline	5	0.331	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
12	Truck Entrance NB	350	0.066287879	8	2028	Passenger Car	Gasoline	0	0.000	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
13	Fedinand St WB b/w Truck Entrance & Private Acces	300	0.056818182	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
14	Fedinand St EB b/w Truck Entrance & Private Access	300	0.056818182	8	2028	Passenger Car	Gasoline	5	0.284	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
15	Fedinand St WB b/w Private Access & Kilbourn Ave	756	0.143181818	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
16	Fedinand St EB b/w Private Access & Kilbourn Ave	756	0.143181818	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
17	Kilbourn Ave SB b/w Fedinand St & North Car Access	358	0.06780303	8	2028	Passenger Car	Gasoline	10	0.678	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
18	Kilbourn Ave NB b/w Fedinand St & North Car Acces	358	0.06780303	8	2028	Passenger Car	Gasoline	5	0.339	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
19	North Car Access WB	250	0.047348485	8	2028	Passenger Car	Gasoline	0	0.000	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
20	North Car Access EB	250	0.047348485	8	2028	Passenger Car	Gasoline	10	0.473	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
21	Kilbourn Ave SB b/w North Car Access & South Car A	125	0.023674242	8	2028	Passenger Car	Gasoline	5	0.118	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
22	Kilbourn Ave NB b/w North Car Access & South Car A	125	0.023674242	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
23	Parking Lot Access WB	300	0.056818182	8	2028	Passenger Car	Gasoline	10	0.568	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
24	Parking Lot Access EB	300	0.056818182	8	2028	Passenger Car	Gasoline	15	0.852	15	12.5 <= speed < 17.5 mph	0.024	0.002	0.001
25	Kilbourn Ave SB b/w Parking Lot Access & Lake St	700	0.132575758	8	2028	Passenger Car	Gasoline	10	1.326	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
26	Kilbourn Ave NB b/w Parking Lot Access & Lake St	700	0.132575758	8	2028	Passenger Car	Gasoline	10	1.326	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
27	Lake St WB west of Kilbourn Ave	2640	0.5	16	2028	Passenger Car	Gasoline	5	2.500	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
28	Lake St EB west of Kilbourn Ave	2640	0.5	16	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
29	Kilbourn Ave SB b/w south of Lake St	2640	0.5	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
30	Kilbourn Ave NB b/w south of Lake St	2640	0.5	8	2028	Passenger Car	Gasoline	0	0.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
31	Lake St WB east of Kilbourn Ave	2640	0.5	16	2028	Passenger Car	Gasoline	10	5.000	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001
32	Lake St WB east of Kilbourn Ave	2640	0.5	16	2028	Passenger Car	Gasoline	5	2.500	30	27.5 <= speed < 32.5 mph	0.021	0.001	0.001

Off-Network Idle Emissions

LinkID	Link Description (Road Name, Direction)	Idle Link Area (m2)	yearID	sourceTypeName	fuelTypeDesc	Volume (Peak Hour)	Idle minutes per hour per vehicle	Idle minutes/ hr	Speed Bin	NOx EF (g/hr)	PM10 EF (g/hr)	PM2.5 EF (g/hr)
33-Idle	Kilbourn Avenue / Ferdinand Street	225	2028	Passenger Car	Gasoline	30	0.169	5.0625	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
34-Idle	Kilbourn Avenue / North Car Access	225	2028	Passenger Car	Gasoline	30	0.167	5	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
35-Idle	Kilbourn Avenue / Parking Lot Access/South CarAccess	225	2028	Passenger Car	Gasoline	50	0.177	8.8541667	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
36-Idle	Ferdinand Street / Truck Exit	225	2028	Passenger Car	Gasoline	5	0.150	0.75	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
37-Idle	Fleet Management Driveway / Ferdinand Street	225	2028	Passenger Car	Gasoline	20	0.138	2.75	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
38-Idle	Kilbourn Avenue / Chicago Avenue	225	2028	Passenger Car	Gasoline	35	0.547	19.152778	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
39-Idle	Kilbourn Avenue / Lake Street	450	2028	Passenger Car	Gasoline	40	0.235	9.4	speed = 0 (idle) (g/hr)	0.086	0.016	0.014
Pass-Idle	Passenger car idling on site	720	2028	Passenger Car	Gasoline	35	5	175	speed = 0 (idle) (g/hr)	0.086	0.016	0.014

APPENDIX D

Summary of Mobile Source Link Emission Rates

On-Network Emission Rates

LinkID	Link Description (Road Name, Direction)	NOx EF (g/s/m2)	PM10 EF (g/s/m2)	PM2.5 EF (g/s/m2)
1	Chicago Ave WB west of Kilbourn Ave	2.25E-09	1.28E-10	1.14E-10
2	Chicago Ave EB west of Kilbourn Ave	4.51E-09	2.57E-10	2.27E-10
3	Chicago Ave WB east of Kilbourn Ave	2.25E-09	1.28E-10	1.14E-10
4	Chicago Ave EB east of Kilbourn Ave	0.00E+00	0.00E+00	0.00E+00
5	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	4.51E-09	2.57E-10	2.27E-10
6	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	2.25E-09	1.28E-10	1.14E-10
7	Pricate Access SB north of Fedinand St	0.00E+00	0.00E+00	0.00E+00
8	Pricate Access NB north of Fedinand St	0.00E+00	0.00E+00	0.00E+00
9	Fedinand St WB east of Truck Entrance	2.25E-09	1.28E-10	1.14E-10
10	Fedinand St EB east of Truck Entrance	2.25E-09	1.28E-10	1.14E-10
11	Truck Entrance SB	2.55E-09	1.68E-10	1.48E-10
12	Truck Entrance NB	0.00E+00	0.00E+00	0.00E+00
13	Fedinand St WB b/w Truck Entrance & Private Access	0.00E+00	0.00E+00	0.00E+00
14	Fedinand St EB b/w Truck Entrance & Private Access	2.25E-09	1.28E-10	1.14E-10
15	Fedinand St WB b/w Private Access & Kilbourn Ave	0.00E+00	0.00E+00	0.00E+00
16	Fedinand St EB b/w Private Access & Kilbourn Ave	0.00E+00	0.00E+00	0.00E+00
17	Kilbourn Ave SB b/w Fedinand St & North Car Access	4.51E-09	2.57E-10	2.27E-10
18	Kilbourn Ave NB b/w Fedinand St & North Car Access	2.25E-09	1.28E-10	1.14E-10
19	North Car Access WB	0.00E+00	0.00E+00	0.00E+00
20	North Car Access EB	5.09E-09	3.35E-10	2.96E-10
21	Kilbourn Ave SB b/w North Car Access & South Car Access	2.25E-09	1.28E-10	1.14E-10
22	Kilbourn Ave NB b/w North Car Access & South Car Access	0.00E+00	0.00E+00	0.00E+00
23	Parking Lot Access WB	5.09E-09	3.35E-10	2.96E-10
24	Parking Lot Access EB	7.64E-09	5.03E-10	4.45E-10
25	Kilbourn Ave SB b/w Parking Lot Access & Lake St	4.51E-09	2.57E-10	2.27E-10
26	Kilbourn Ave NB b/w Parking Lot Access & Lake St	4.51E-09	2.57E-10	2.27E-10
27	Lake St WB west of Kilbourn Ave	1.13E-09	6.42E-11	5.68E-11
28	Lake St EB west of Kilbourn Ave	0.00E+00	0.00E+00	0.00E+00
29	Kilbourn Ave SB b/w south of Lake St	0.00E+00	0.00E+00	0.00E+00
30	Kilbourn Ave NB b/w south of Lake St	0.00E+00	0.00E+00	0.00E+00
31	Lake St WB east of Kilbourn Ave	2.25E-09	1.28E-10	1.14E-10
32	Lake St WB east of Kilbourn Ave	1.13E-09	6.42E-11	5.68E-11

Off-Network Idle Emission Rates

LinkID	Link Description (Road Name, Direction)	NOx EF (g/s/m2)	PM10 EF (g/s/m2)	PM2.5 EF (g/s/m2)
33-Idle	Kilbourn Avenue / Ferdinand Street	8.92E-09	1.66E-09	1.47E-09
34-Idle	Kilbourn Avenue / North Car Access	8.81E-09	1.64E-09	1.45E-09
35-Idle	Kilbourn Avenue / Parking Lot Access/South CarAccess	1.56E-08	2.91E-09	2.57E-09
36-Idle	Ferdinand Street / Truck Exit	1.32E-09	2.47E-10	2.18E-10
37-Idle	Fleet Management Driveway / Ferdinand Street	4.85E-09	9.04E-10	8.00E-10
38-Idle	Kilbourn Avenue / Chicago Avenue	3.38E-08	6.30E-09	5.57E-09
39-Idle	Kilbourn Avenue / Lake Street	8.28E-09	1.54E-09	1.37E-09
Pass-Idle	Passenger car idling on site	9.64E-08	1.80E-08	1.59E-08

APPENDIX E

AERMOD Model Input Summary

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	4239 W Ferdinand_NO2wB
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,ARM2,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	Table(5,2) / /item /ID /URB1 /POPULATION /2700000 /NAME /AREA1 /ROUGHNESS /1
CO	POLLUTID	Pollutant ID	NO2
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	T
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\MSEYED~1\DOCUME~1\AQIS-1~2\METAND~1\KMDW16~1\KMDW1620\SURFACE_2016-2020_MERGED.SFC
ME	PROFFILE	Profile met file	C:\Users\MSEYED~1\DOCUME~1\AQIS-1~2\METAND~1\KMDW16~1\KMDW1620\SURFACE_2016-2020_MERGED.PFL
ME	SURFDATA	Surf met data info.	14819 2016
ME	UAIRDATA	U-Air met data info.	94982 2016
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	188.4
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
LINK1	AREA	Chicago Ave WB west of Kilbourn Ave	438533.3	4638405.9	184.61	2.25E-09	(g/s-m**2)	1.3
LINK2	AREA	Chicago Ave EB west of Kilbourn Ave	439354.8	4638415.9	184.31	4.51E-09	(g/s-m**2)	1.3
LINK3	AREA	Chicago Ave WB east of Kilbourn Ave	438533.2	4638397.3	184.62	2.25E-09	(g/s-m**2)	1.3
LINK38IDLE	AREA	Kilbourn Avenue / Chicago Avenue	438534.3	4638405.5	184.61	3.38E-08	(g/s-m**2)	1.3
LINK11	AREA	Truck Entrance SB	439076.8	4637783.8	185.33	2.55E-09	(g/s-m**2)	1.3
LINK14	AREA	Fedinand St EB b/w Truck Entrance & Private Access	439074.5	4637789.4	185.35	2.25E-09	(g/s-m**2)	1.3
LINK18	AREA	Kilbourn Ave NB b/w Fedinand St & North Car Access	438763.2	4637779.7	184.82	2.25E-09	(g/s-m**2)	1.3
LINK17	AREA	Kilbourn Ave SB b/w Fedinand St & North Car Access	438754.1	4637779.2	184.78	4.51E-09	(g/s-m**2)	1.3
LINK20	AREA	North Car Access EB	438774.2	4637684.6	184.81	5.09E-09	(g/s-m**2)	1.3
LINK21	AREA	Kilbourn Ave SB b/w North Car Access & South Car Access	438750.7	4637668.4	184.86	2.25E-09	(g/s-m**2)	1.3
LINK23	AREA	Parking Lot Access WB	438741.7	4637648.4	184.81	5.09E-09	(g/s-m**2)	1.3
LINK24	AREA	Parking Lot Access EB	438726.4	4637640.1	184.81	7.64E-09	(g/s-m**2)	1.3
LINK25	AREA	Kilbourn Ave SB b/w Parking Lot Access & Lake St	438752.6	4637628.5	184.87	4.51E-09	(g/s-m**2)	1.3
LINK26	AREA	Kilbourn Ave NB b/w Parking Lot Access & Lake St	438759.7	4637628.5	184.91	4.51E-09	(g/s-m**2)	1.3
LINK27	AREA	Lake St WB west of Kilbourn Ave	438754.9	4637415.9	184.9	1.13E-09	(g/s-m**2)	1.3
LINK31	AREA	Lake St WB east of Kilbourn Ave	438780.9	4637422.1	184.93	2.25E-09	(g/s-m**2)	1.3
LINK32	AREA	Lake St EB east of Kilbourn Ave	438780.3	4637407.4	184.91	1.13E-09	(g/s-m**2)	1.3
LINK33IDLE	AREA	Kilbourn Avenue / Ferdinand Street	438748.3	4637795	184.74	8.92E-09	(g/s-m**2)	1.3
LINK34IDLE	AREA	Kilbourn Avenue / North Car Access	438761	4637669.3	184.85	8.81E-09	(g/s-m**2)	1.3
LINK35IDLE	AREA	"Kilbourn Avenue / Parking Lot Access/South Car	438731.4	4637645.6	184.81	1.56E-08	(g/s-m**2)	1.3
LINK36IDLE	AREA	Ferdinand Street / Truck Exit	438963.7	4637800.8	185.31	1.32E-09	(g/s-m**2)	1.3
KINK37IDLE	AREA	Fleet Management Driveway / Ferdinand Street	439072.7	4637806.6	185.41	4.85E-09	(g/s-m**2)	1.3
LINK39IDLE	AREA	Kilbourn Avenue / Lake Street	438760.1	4637418.1	184.91	8.28E-09	(g/s-m**2)	1.3
PASSIDLE	AREA	Passenger car idling on site	438771.3	4637651.7	184.94	9.64E-08	(g/s-m**2)	1.3
STATIONARY	AREAPOLY	Building Expansion	438982.4	4637665	185.22	3.13E-06	(g/s-m**2)	5.3
LINK6	AREAPOLY	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	438551.2	4638387.6	184.86	2.25E-09	(g/s-m**2)	1.3
LINK5	AREAPOLY	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	438542.7	4638387.8	184.81	4.51E-09	(g/s-m**2)	1.3
LINK10	AREAPOLY	Fedinand St EB east of Truck Entrance	439086.3	4637790.8	185.35	2.25E-09	(g/s-m**2)	1.3
LINK9	AREAPOLY	Fedinand St WB east of Truck Entrance	439086.3	4637795.4	185.38	2.25E-09	(g/s-m**2)	1.3

Rectangular Area Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	X Length	Y Length	Angle	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s-m**2)	(m)	(m)	(m)	(deg)	(m)
LINK1	Chicago Ave WB west of Kilbourn Ave	438533.3	4638405.9	184.61	2.25E-09	1.3	804.672	8	179.3	1.2

LINK2	Chicago Ave EB west of Kilbourn Ave	439354.8	4638415.9	184.31	4.51E-09	1.3	804.672	8	179.3	1.2
LINK3	Chicago Ave WB east of Kilbourn Ave	438533.2	4638397.3	184.62	2.25E-09	1.3	804.672	8	179.3	1.2
LINK38IDLE	Kilbourn Avenue / Chicago Avenue	438534.3	4638405.5	184.61	3.38E-08	1.3	15	15	90	1.2
LINK11	Truck Entrance SB	439076.8	4637783.8	185.33	2.55E-09	1.3	106.68	8	88.7	1.2
LINK14	Fedinand St EB b/w Truck Entrance & Private Access	439074.5	4637789.4	185.35	2.25E-09	1.3	8	91.44	-91	1.2
LINK18	Kilbourn Ave NB b/w Fedinand St & North Car Access	438763.2	4637779.7	184.82	2.25E-09	1.3	8	109.1184	177.7	1.2
LINK17	Kilbourn Ave SB b/w Fedinand St & North Car Access	438754.1	4637779.2	184.78	4.51E-09	1.3	8	109.1184	177.7	1.2
LINK20	North Car Access EB	438774.2	4637684.6	184.81	5.09E-09	1.3	8	76.2	-1.6	1.2
LINK21	Kilbourn Ave SB b/w North Car Access & South Car Access	438750.7	4637668.4	184.86	2.25E-09	1.3	38.1	8	87.5	1.2
LINK23	Parking Lot Access WB	438741.7	4637648.4	184.81	5.09E-09	1.3	91.44	8	-92	1.2
LINK24	Parking Lot Access EB	438726.4	4637640.1	184.81	7.64E-09	1.3	91.44	8	-92	1.2
LINK25	Kilbourn Ave SB b/w Parking Lot Access & Lake St	438752.6	4637628.5	184.87	4.51E-09	1.3	213.36	8	88.6	1.2
LINK26	Kilbourn Ave NB b/w Parking Lot Access & Lake St	438759.7	4637628.5	184.91	4.51E-09	1.3	213.36	8	88.6	1.2
LINK27	Lake St WB west of Kilbourn Ave	438754.9	4637415.9	184.9	1.13E-09	1.3	804.672	16	-175.5	1.2
LINK31	Lake St WB east of Kilbourn Ave	438780.9	4637422.1	184.93	2.25E-09	1.3	16	804.672	94.8	1.2
LINK32	Lake St EB east of Kilbourn Ave	438780.3	4637407.4	184.91	1.13E-09	1.3	16	804.672	94.8	1.2
LINK33IDLE	Kilbourn Avenue / Ferdinand Street	438748.3	4637795	184.74	8.92E-09	1.3	15	15	88	1.2
LINK34IDLE	Kilbourn Avenue / North Car Access	438761	4637669.3	184.85	8.81E-09	1.3	15	15	88.4	1.2
LINK35IDLE	"Kilbourn Avenue / Parking Lot Access/South Car	438731.4	4637645.6	184.81	1.56E-08	1.3	15	15	86.8	1.2
LINK36IDLE	Ferdinand Street / Truck Exit	438963.7	4637800.8	185.31	1.32E-09	1.3	15	15	88	1.2
KINK37IDLE	Fleet Management Driveway / Ferdinand Street	439072.7	4637806.6	185.41	4.85E-09	1.3	15	15	87.6	1.2
LINK39IDLE	Kilbourn Avenue / Lake Street	438760.1	4637418.1	184.91	8.28E-09	1.3	30	15	93.8	1.2
PASSIDLE	Passenger car idling on site	438771.3	4637651.7	184.94	9.64E-08	1.3	45	16	88.7	1.2

Polygon Area Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Vertices	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s-m**2)	(m)	#	(m)
STATIONARY	Building Expansion	438982.4	4637665	185.22	3.13E-06	5.3	8	5
LINK6	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	438551.2	4638387.6	184.86	2.25E-09	1.3	11	1.2
LINK5	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	438542.7	4638387.8	184.81	4.51E-09	1.3	11	1.2
LINK10	Fedinand St EB east of Truck Entrance	439086.3	4637790.8	185.35	2.25E-09	1.3	10	1.2
LINK9	Fedinand St WB east of Truck Entrance	439086.3	4637795.4	185.38	2.25E-09	1.3	10	1.2

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	4239 W Ferdinand_PM10
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	24,MONTH,ANNUAL
CO	URBANOPT	Urban options	Table(5,2) / /item /ID /URB1 /POPULATION /2700000 /NAME /AREA1 /ROUGHNESS /1
CO	POLLUTID	Pollutant ID	PM10
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	T
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\MSEYED~1\DOCUME~1\AQIS-1~2\METAND~1\KMDW16~1\KMDW1620\SURFACE_2016-2020_MERGED.SFC
ME	PROFFILE	Profile met file	C:\Users\MSEYED~1\DOCUME~1\AQIS-1~2\METAND~1\KMDW16~1\KMDW1620\SURFACE_2016-2020_MERGED.PFL
ME	SURFDATA	Surf met data info.	14819 2016
ME	UAIRDATA	U-Air met data info.	94982 2016
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	188.4
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
LINK1	AREA	Chicago Ave WB west of Kilbourn Ave	438533.3	4638405.9	184.61	1.28E-10	(g/s-m**2)	1.3
LINK2	AREA	Chicago Ave EB west of Kilbourn Ave	439354.8	4638415.9	184.31	2.57E-10	(g/s-m**2)	1.3
LINK3	AREA	Chicago Ave WB east of Kilbourn Ave	438533.2	4638397.3	184.62	1.28E-10	(g/s-m**2)	1.3
LINK38IDLE	AREA	Kilbourn Avenue / Chicago Avenue	438534.3	4638405.5	184.61	6.3E-09	(g/s-m**2)	1.3
LINK11	AREA	Truck Entrance SB	439076.8	4637783.8	185.33	1.68E-10	(g/s-m**2)	1.3
LINK14	AREA	Fedinand St EB b/w Truck Entrance & Private Access	439074.5	4637789.4	185.35	1.28E-10	(g/s-m**2)	1.3
LINK18	AREA	Kilbourn Ave NB b/w Fedinand St & North Car Access	438763.2	4637779.7	184.82	1.28E-10	(g/s-m**2)	1.3
LINK17	AREA	Kilbourn Ave SB b/w Fedinand St & North Car Access	438754.1	4637779.2	184.78	2.57E-10	(g/s-m**2)	1.3
LINK20	AREA	North Car Access EB	438774.2	4637684.6	184.81	3.35E-10	(g/s-m**2)	1.3
LINK21	AREA	Kilbourn Ave SB b/w North Car Access & South Car Access	438750.7	4637668.4	184.86	1.28E-10	(g/s-m**2)	1.3
LINK23	AREA	Parking Lot Access WB	438741.7	4637648.4	184.81	3.35E-10	(g/s-m**2)	1.3
LINK24	AREA	Parking Lot Access EB	438726.4	4637640.1	184.81	5.03E-10	(g/s-m**2)	1.3
LINK25	AREA	Kilbourn Ave SB b/w Parking Lot Access & Lake St	438752.6	4637628.5	184.87	2.57E-10	(g/s-m**2)	1.3
LINK26	AREA	Kilbourn Ave NB b/w Parking Lot Access & Lake St	438759.7	4637628.5	184.91	2.57E-10	(g/s-m**2)	1.3
LINK27	AREA	Lake St WB west of Kilbourn Ave	438754.9	4637415.9	184.90	6.42E-11	(g/s-m**2)	1.3
LINK31	AREA	Lake St WB east of Kilbourn Ave	438780.9	4637422.1	184.93	1.28E-10	(g/s-m**2)	1.3
LINK32	AREA	Lake St EB east of Kilbourn Ave	438780.3	4637407.4	184.91	6.42E-11	(g/s-m**2)	1.3
LINK33IDLE	AREA	Kilbourn Avenue / Ferdinand Street	438748.3	4637795.0	184.74	1.66E-09	(g/s-m**2)	1.3
LINK34IDLE	AREA	Kilbourn Avenue / North Car Access	438761	4637669.3	184.85	1.64E-09	(g/s-m**2)	1.3
LINK35IDLE	AREA	"Kilbourn Avenue / Parking Lot Access/South Car	438731.4	4637645.6	184.81	2.91E-09	(g/s-m**2)	1.3
LINK36IDLE	AREA	Ferdinand Street / Truck Exit	438963.7	4637800.8	185.31	2.47E-10	(g/s-m**2)	1.3
KINK37IDLE	AREA	Fleet Management Driveway / Ferdinand Street	439072.7	4637806.6	185.41	9.04E-10	(g/s-m**2)	1.3
LINK39IDLE	AREA	Kilbourn Avenue / Lake Street	438760.1	4637418.1	184.91	1.54E-09	(g/s-m**2)	1.3
PASSIDLE	AREA	Passenger car idling on site	438771.3	4637651.7	184.94	1.8E-08	(g/s-m**2)	1.3
STATIONARY	AREAPOLY	Building Expansion	438982.4	4637665	185.22	2.36E-07	(g/s-m**2)	5.3
LINK6	AREAPOLY	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	438551.2	4638387.6	184.86	1.28E-10	(g/s-m**2)	1.3
LINK5	AREAPOLY	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	438542.7	4638387.8	184.81	2.57E-10	(g/s-m**2)	1.3
LINK10	AREAPOLY	Fedinand St EB east of Truck Entrance	439086.3	4637790.8	185.35	1.28E-10	(g/s-m**2)	1.3
LINK9	AREAPOLY	Fedinand St WB east of Truck Entrance	439086.3	4637795.4	185.38	1.28E-10	(g/s-m**2)	1.3

Rectangular Area Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	X Length	Y Length	Angle	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s-m**2)	(m)	(m)	(m)	(deg)	(m)
LINK1	Chicago Ave WB west of Kilbourn Ave	438533.3	4638405.9	184.61	1.28E-10	1.3	804.672	8	179.3	1.2

LINK2	Chicago Ave EB west of Kilbourn Ave	439354.8	4638415.9	184.31	2.57E-10	1.3	804.672	8	179.3	1.2
LINK3	Chicago Ave WB east of Kilbourn Ave	438533.2	4638397.3	184.62	1.28E-10	1.3	804.672	8	179.3	1.2
LINK38IDLE	Kilbourn Avenue / Chicago Avenue	438534.3	4638405.5	184.61	6.3E-09	1.3	15	15	90	1.2
LINK11	Truck Entrance SB	439076.8	4637783.8	185.33	1.68E-10	1.3	106.68	8	88.7	1.2
LINK14	Fedinand St EB b/w Truck Entrance & Private Access	439074.5	4637789.4	185.35	1.28E-10	1.3	8	91.44	-91	1.2
LINK18	Kilbourn Ave NB b/w Fedinand St & North Car Access	438763.2	4637779.7	184.82	1.28E-10	1.3	8	109.1184	177.7	1.2
LINK17	Kilbourn Ave SB b/w Fedinand St & North Car Access	438754.1	4637779.2	184.78	2.57E-10	1.3	8	109.1184	177.7	1.2
LINK20	North Car Access EB	438774.2	4637684.6	184.81	3.35E-10	1.3	8	76.2	-1.6	1.2
LINK21	Kilbourn Ave SB b/w North Car Access & South Car Access	438750.7	4637668.4	184.86	1.28E-10	1.3	38.1	8	87.5	1.2
LINK23	Parking Lot Access WB	438741.7	4637648.4	184.81	3.35E-10	1.3	91.44	8	-92	1.2
LINK24	Parking Lot Access EB	438726.4	4637640.1	184.81	5.03E-10	1.3	91.44	8	-92	1.2
LINK25	Kilbourn Ave SB b/w Parking Lot Access & Lake St	438752.6	4637628.5	184.87	2.57E-10	1.3	213.36	8	88.6	1.2
LINK26	Kilbourn Ave NB b/w Parking Lot Access & Lake St	438759.7	4637628.5	184.91	2.57E-10	1.3	213.36	8	88.6	1.2
LINK27	Lake St WB west of Kilbourn Ave	438754.9	4637415.9	184.90	6.42E-11	1.3	804.672	16	-175.5	1.2
LINK31	Lake St WB east of Kilbourn Ave	438780.9	4637422.1	184.93	1.28E-10	1.3	16	804.672	94.8	1.2
LINK32	Lake St EB east of Kilbourn Ave	438780.3	4637407.4	184.91	6.42E-11	1.3	16	804.672	94.8	1.2
LINK33IDLE	Kilbourn Avenue / Ferdinand Street	438748.3	4637795.0	184.74	1.66E-09	1.3	15	15	88	1.2
LINK34IDLE	Kilbourn Avenue / North Car Access	438761	4637669.3	184.85	1.64E-09	1.3	15	15	88.4	1.2
LINK35IDLE	"Kilbourn Avenue / Parking Lot Access/South Car	438731.4	4637645.6	184.81	2.91E-09	1.3	15	15	86.8	1.2
LINK36IDLE	Ferdinand Street / Truck Exit	438963.7	4637800.8	185.31	2.47E-10	1.3	15	15	88	1.2
KINK37IDLE	Fleet Management Driveway / Ferdinand Street	439072.7	4637806.6	185.41	9.04E-10	1.3	15	15	87.6	1.2
LINK39IDLE	Kilbourn Avenue / Lake Street	438760.1	4637418.1	184.91	1.54E-09	1.3	30	15	93.8	1.2
PASSIDLE	Passenger car idling on site	438771.3	4637651.7	184.94	1.8E-08	1.3	45	16	88.7	1.2

Polygon Area Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Vertices	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s-m**2)	(m)	#	(m)
STATIONARY	Building Expansion	438982.4	4637665	185.22	2.36E-07	5.3	8	5
LINK6	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	438551.2	4638387.6	184.86	1.28E-10	1.3	11	1.2
LINK5	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	438542.7	4638387.8	184.81	2.57E-10	1.3	11	1.2
LINK10	Fedinand St EB east of Truck Entrance	439086.3	4637790.8	185.35	1.28E-10	1.3	10	1.2
LINK9	Fedinand St WB east of Truck Entrance	439086.3	4637795.4	185.38	1.28E-10	1.3	10	1.2

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	4239 W Ferdinand_PM25
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	24,ANNUAL
CO	URBANOPT	Urban options	Table(5,2) / /item /ID /URB1 /POPULATION /2700000 /NAME /AREA1 /ROUGHNESS /1
CO	POLLUTID	Pollutant ID	PM25
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	T
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\MSEYED~1\DOCUME~1\AQIS-1~2\METAND~1\KMDW16~1\KMDW1620\SURFACE_2016-2020_MERGED.SFC
ME	PROFFILE	Profile met file	C:\Users\MSEYED~1\DOCUME~1\AQIS-1~2\METAND~1\KMDW16~1\KMDW1620\SURFACE_2016-2020_MERGED.PFL
ME	SURFDATA	Surf met data info.	14819 2016
ME	UAIRDATA	U-Air met data info.	94982 2016
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	188.4
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
LINK1	AREA	Chicago Ave WB west of Kilbourn Ave	438533.3	4638405.9	184.61	1.14E-10	(g/s-m**2)	1.3
LINK2	AREA	Chicago Ave EB west of Kilbourn Ave	439354.8	4638415.9	184.31	2.27E-10	(g/s-m**2)	1.3
LINK3	AREA	Chicago Ave WB east of Kilbourn Ave	438533.2	4638397.3	184.62	1.14E-10	(g/s-m**2)	1.3
LINK38IDLE	AREA	Kilbourn Avenue / Chicago Avenue	438534.3	4638405.5	184.61	5.57E-09	(g/s-m**2)	1.3
LINK11	AREA	Truck Entrance SB	439076.8	4637783.8	185.33	1.48E-10	(g/s-m**2)	1.3
LINK14	AREA	Fedinand St EB b/w Truck Entrance & Private Access	439074.5	4637789.4	185.35	1.14E-10	(g/s-m**2)	1.3
LINK18	AREA	Kilbourn Ave NB b/w Fedinand St & North Car Access	438763.2	4637779.7	184.82	1.14E-10	(g/s-m**2)	1.3
LINK17	AREA	Kilbourn Ave SB b/w Fedinand St & North Car Access	438754.1	4637779.2	184.78	2.27E-10	(g/s-m**2)	1.3
LINK20	AREA	North Car Access EB	438774.2	4637684.6	184.81	2.96E-10	(g/s-m**2)	1.3
LINK21	AREA	Kilbourn Ave SB b/w North Car Access & South Car Access	438750.7	4637668.4	184.86	1.14E-10	(g/s-m**2)	1.3
LINK23	AREA	Parking Lot Access WB	438741.7	4637648.4	184.81	2.96E-10	(g/s-m**2)	1.3
LINK24	AREA	Parking Lot Access EB	438726.4	4637640.1	184.81	4.45E-10	(g/s-m**2)	1.3
LINK25	AREA	Kilbourn Ave SB b/w Parking Lot Access & Lake St	438752.6	4637628.5	184.87	2.27E-10	(g/s-m**2)	1.3
LINK26	AREA	Kilbourn Ave NB b/w Parking Lot Access & Lake St	438759.7	4637628.5	184.91	2.27E-10	(g/s-m**2)	1.3
LINK27	AREA	Lake St WB west of Kilbourn Ave	438754.9	4637415.9	184.9	5.68E-11	(g/s-m**2)	1.3
LINK31	AREA	Lake St WB east of Kilbourn Ave	438780.9	4637422.1	184.93	1.14E-10	(g/s-m**2)	1.3
LINK32	AREA	Lake St EB east of Kilbourn Ave	438780.3	4637407.4	184.91	5.68E-11	(g/s-m**2)	1.3
LINK33IDLE	AREA	Kilbourn Avenue / Ferdinand Street	438748.3	4637795	184.74	1.47E-09	(g/s-m**2)	1.3
LINK34IDLE	AREA	Kilbourn Avenue / North Car Access	438761	4637669.3	184.85	1.45E-09	(g/s-m**2)	1.3
LINK35IDLE	AREA	"Kilbourn Avenue / Parking Lot Access/South Car	438731.4	4637645.6	184.81	2.57E-09	(g/s-m**2)	1.3
LINK36IDLE	AREA	Ferdinand Street / Truck Exit	438963.7	4637800.8	185.31	2.18E-10	(g/s-m**2)	1.3
KINK37IDLE	AREA	Fleet Management Driveway / Ferdinand Street	439072.7	4637806.6	185.41	8.E-10	(g/s-m**2)	1.3
LINK39IDLE	AREA	Kilbourn Avenue / Lake Street	438760.1	4637418.1	184.91	1.37E-09	(g/s-m**2)	1.3
PASSIDLE	AREA	Passenger car idling on site	438771.3	4637651.7	184.94	1.59E-08	(g/s-m**2)	1.3
STATIONARY	AREAPOLY	Building Expansion	438982.4	4637665	185.22	2.36E-07	(g/s-m**2)	5.3
LINK6	AREAPOLY	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	438551.2	4638387.6	184.86	1.14E-10	(g/s-m**2)	1.3
LINK5	AREAPOLY	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	438542.7	4638387.8	184.81	2.27E-10	(g/s-m**2)	1.3
LINK10	AREAPOLY	Fedinand St EB east of Truck Entrance	439086.3	4637790.8	185.35	1.14E-10	(g/s-m**2)	1.3
LINK9	AREAPOLY	Fedinand St WB east of Truck Entrance	439086.3	4637795.4	185.38	1.14E-10	(g/s-m**2)	1.3

Rectangular Area Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	X Length	Y Length	Angle	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s-m**2)	(m)	(m)	(m)	(deg)	(m)
LINK1	Chicago Ave WB west of Kilbourn Ave	438533.3	4638405.9	184.61	1.14E-10	1.3	804.672	8	179.3	1.2

LINK2	Chicago Ave EB west of Kilbourn Ave	439354.8	4638415.9	184.31	2.27E-10	1.3	804.672	8	179.3	1.2
LINK3	Chicago Ave WB east of Kilbourn Ave	438533.2	4638397.3	184.62	1.14E-10	1.3	804.672	8	179.3	1.2
LINK38IDLE	Kilbourn Avenue / Chicago Avenue	438534.3	4638405.5	184.61	5.57E-09	1.3	15	15	90	1.2
LINK11	Truck Entrance SB	439076.8	4637783.8	185.33	1.48E-10	1.3	106.68	8	88.7	1.2
LINK14	Fedinand St EB b/w Truck Entrance & Private Access	439074.5	4637789.4	185.35	1.14E-10	1.3	8	91.44	-91	1.2
LINK18	Kilbourn Ave NB b/w Fedinand St & North Car Access	438763.2	4637779.7	184.82	1.14E-10	1.3	8	109.1184	177.7	1.2
LINK17	Kilbourn Ave SB b/w Fedinand St & North Car Access	438754.1	4637779.2	184.78	2.27E-10	1.3	8	109.1184	177.7	1.2
LINK20	North Car Access EB	438774.2	4637684.6	184.81	2.96E-10	1.3	8	76.2	-1.6	1.2
LINK21	Kilbourn Ave SB b/w North Car Access & South Car Access	438750.7	4637668.4	184.86	1.14E-10	1.3	38.1	8	87.5	1.2
LINK23	Parking Lot Access WB	438741.7	4637648.4	184.81	2.96E-10	1.3	91.44	8	-92	1.2
LINK24	Parking Lot Access EB	438726.4	4637640.1	184.81	4.45E-10	1.3	91.44	8	-92	1.2
LINK25	Kilbourn Ave SB b/w Parking Lot Access & Lake St	438752.6	4637628.5	184.87	2.27E-10	1.3	213.36	8	88.6	1.2
LINK26	Kilbourn Ave NB b/w Parking Lot Access & Lake St	438759.7	4637628.5	184.91	2.27E-10	1.3	213.36	8	88.6	1.2
LINK27	Lake St WB west of Kilbourn Ave	438754.9	4637415.9	184.9	5.68E-11	1.3	804.672	16	-175.5	1.2
LINK31	Lake St WB east of Kilbourn Ave	438780.9	4637422.1	184.93	1.14E-10	1.3	16	804.672	94.8	1.2
LINK32	Lake St EB east of Kilbourn Ave	438780.3	4637407.4	184.91	5.68E-11	1.3	16	804.672	94.8	1.2
LINK33IDLE	Kilbourn Avenue / Ferdinand Street	438748.3	4637795	184.74	1.47E-09	1.3	15	15	88	1.2
LINK34IDLE	Kilbourn Avenue / North Car Access	438761	4637669.3	184.85	1.45E-09	1.3	15	15	88.4	1.2
LINK35IDLE	"Kilbourn Avenue / Parking Lot Access/South Car	438731.4	4637645.6	184.81	2.57E-09	1.3	15	15	86.8	1.2
LINK36IDLE	Ferdinand Street / Truck Exit	438963.7	4637800.8	185.31	2.18E-10	1.3	15	15	88	1.2
KINK37IDLE	Fleet Management Driveway / Ferdinand Street	439072.7	4637806.6	185.41	8.E-10	1.3	15	15	87.6	1.2
LINK39IDLE	Kilbourn Avenue / Lake Street	438760.1	4637418.1	184.91	1.37E-09	1.3	30	15	93.8	1.2
PASSIDLE	Passenger car idling on site	438771.3	4637651.7	184.94	1.59E-08	1.3	45	16	88.7	1.2

Polygon Area Sources

Source ID / Pollutant ID	**Description**	**UTM**		**Elev.**	**Emiss. Rate**	**Release Height**	**Vertices**	**Init. Vert. Dim.**
		East (m)	**North (m)**	**(m)**	**(g/s-m**2)**	**(m)**	**#**	**(m)**
STATIONARY	Building Expansion	438982.4	4637665	185.22	2.36E-07	5.3	8	5
LINK6	Kilbourn Ave NB b/w Chicago Ave & Fedinand St	438551.2	4638387.6	184.86	1.14E-10	1.3	11	1.2
LINK5	Kilbourn Ave SB b/w Chicago Ave & Fedinand St	438542.7	4638387.8	184.81	2.27E-10	1.3	11	1.2
LINK10	Fedinand St EB east of Truck Entrance	439086.3	4637790.8	185.35	1.14E-10	1.3	10	1.2
LINK9	Fedinand St WB east of Truck Entrance	439086.3	4637795.4	185.38	1.14E-10	1.3	10	1.2

APPENDIX F

CDPH-provided Seasonal Hourly NO_2 Background Concentrations

Seasonal Hourly Ambient NO2 Concentrations, for Use With Northwestern Chicago 1-Hour NO2 Modeling:

Hour of Day		NO_2 Ambient Background 98th% (ppb)				NO_2 Ambient Background 98th% (μg/m³)			
Start Time	**End Time**	**Winter**	**Spring**	**Summer**	**Fall**	**Winter**	**Spring**	**Summer**	**Fall**
0:00	1:00	40.35	45.99	41.01	35.32	75.85	86.46	77.09	66.39
1:00	2:00	43.49	48.25	40.52	36.38	81.76	90.71	76.18	68.39
2:00	3:00	41.06	47.67	36.06	35.70	77.20	89.61	67.80	67.11
3:00	4:00	44.58	48.81	37.44	34.10	83.81	91.76	70.40	64.12
4:00	5:00	44.06	48.38	38.03	36.04	82.84	90.96	71.50	67.75
5:00	6:00	46.34	50.74	41.46	38.52	87.12	95.40	77.94	72.41
6:00	7:00	50.82	49.42	40.49	41.51	95.54	92.91	76.12	78.05
7:00	8:00	52.41	42.66	35.17	38.82	98.54	80.20	66.12	72.99
8:00	9:00	49.07	38.74	29.99	35.32	92.25	72.83	56.38	66.39
9:00	10:00	41.73	33.64	28.12	29.88	78.45	63.25	52.87	56.16
10:00	11:00	35.12	30.07	25.84	27.29	66.02	56.53	48.58	51.30
11:00	12:00	31.27	26.96	26.64	26.22	58.79	50.68	50.08	49.29
12:00	13:00	29.56	27.42	22.93	25.50	55.58	51.55	43.11	47.95
13:00	14:00	29.04	26.35	20.49	26.05	54.60	49.53	38.52	48.97
14:00	15:00	29.57	25.03	21.74	27.47	55.59	47.06	40.88	51.65
15:00	16:00	32.09	26.81	21.42	26.86	60.33	50.40	40.27	50.50
16:00	17:00	33.92	26.98	24.81	30.98	63.77	50.73	46.65	58.24
17:00	18:00	40.64	31.19	27.39	37.63	76.40	58.63	51.49	70.74
18:00	19:00	41.49	37.03	27.22	42.67	78.01	69.62	51.17	80.22
19:00	20:00	41.16	40.37	31.86	42.73	77.38	75.90	59.89	80.34
20:00	21:00	43.62	44.46	37.50	42.84	82.00	83.58	70.50	80.53
21:00	22:00	44.84	47.58	38.65	42.48	84.31	89.45	72.66	79.87
22:00	23:00	43.27	48.29	40.66	43.68	81.35	90.78	76.44	82.12
23:00	0:00	42.47	47.68	41.30	41.37	79.84	89.65	77.64	77.78

*Based on AQS Monitor ID 17-031-3103. Average of years 2018, 2019, and 2020.

Ambient Air Background Concentrations
City of Chicago Department of Public Health

Project Location	Pollutant	Averaging Period	3-year Ambient Design Value (ug/m3)	Monitor ID	Monitor Name	Latitude/Longitude
NORTHWEST -4 miles or greater from the lakeshore and north of the Eisenhower Expressway	NO_2	Annual	34	17-031-3103	IEPA Trailer (2018-2020)	41.965193, -87.876265
	PM_{10}	24-hour	102	17-031-1016	Village Hall (2018-2020)	41.80118, -87.832349
	$PM_{2.5}$	24-hour	24	17-031-3103	IEPA Trailer (2018-2020)	41.965193, -87.876265
		Annual	10	17-031-3103	IEPA Trailer (2017, 2019, 2020)	41.965193, -87.876265
NORTHEAST -Within 4 miles of the lakeshore and north of East	NO_2	Annual	31	17-031-0219 and 17-031-0063	Kennedy Near Road 2 (2019-2020) and CTA Building (2017)	41.920009, -87.672995 (Kennedy); 41.7514, -87.635027 (CTA Bldg)
	PM_{10}	24-hour	102	17-031-1016	Village Hall (2018-2020)	41.80118, -87.832349
and West 63rd Street	$PM_{2.5}$	24-hour	22	17-031-0057	Springfield Pump Station (2018-2020)	41.912739, -87.722673
		Annual	9	17-031-0057	Springfield Pump Station (2016, 2017, 2018)	41.912739, -87.722673
SOUTHWEST -4 miles or greater from the lakeshore and south of the Eisenhower Expressway	NO_2	Annual	29	17-031-0076	Com Ed Maintenance Bldg (2018-2020)	41.7514, -87.713488
	PM_{10}	24-hour	102	17-031-1016	Village Hall (2018-2020)	41.80118, -87.832349
	$PM_{2.5}$	24-hour	23	17-031-1016	Village Hall (2018-2020)	41.80118, -87.832349
		Annual	10	17-031-1016	Village Hall (2018-2020)	41.80118, -87.832349
SOUTHEAST Within 4 miles of the lakeshore and south of East and West 63rd Street	NO_2	Annual	19	18-089-0022	Gary, IN (2018-2020)	41.687165, -87.539315
	PM_{10}	24-hour	61	17-031-0022	Washington HS (2018-2020)	41.687165, -87.539315
	$PM_{2.5}$	24-hour	25	17-031-0022	Washington HS (2018-2020)	41.687165, -87.539315
		Annual	9	17-031-0022	Washington HS (2017, 2019, 2020)	41.687165, -87.539315

APPENDIX G

AERMOD Model Electronic Run Files
(Sent as separate document)