Best Management Plan for Fugitive Dust: Anthony Pit Project

Final Report

January 22, 2026

Prepared for:
CBM Aggregates
55 Industrial Street
Toronto, ON M4G 3W9

Prepared by:
Stantec Consulting Ltd.

Project Number:
160961457

Stantec

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
A	Draft Report	Stantec	Dec 20, 2024	KI	Dec 20, 2024	GC	Dec 20, 2024
B	Final Report Version 1.0	Stantec	Feb 3, 2025	KI	Feb 3, 2025	GC	Feb 3, 2025
C	Final Report Version 2.0	Stantec	Jan 16, 2026	KI	Jan 20, 2026	GC	Jan 22, 2026

Limitations and Sign-off

The conclusions in the Report titled Best Management Plan for Fugitive Dust: Anthony Pit Project are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from CBM Aggregates (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided to applicable authorities having jurisdiction and others for whom the Client is responsible, Stantec does not warrant the services to any third party. The report may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

Prepared by: 吴婕妤 Digitally signed by Jieyu (Emily) Wu Date: 2026.01.22 14:10:43 -05'00'
Signature

Emily Wu, B.A.Sc.
Air Quality Scientist
Printed Name and Title

Reviewed by: Digitally signed by Kimberly Ireland Date: 2026.01.22 14:25:38 -05'00'
Signature

Kimberly Ireland, P.Eng.
Senior Environmental Engineer,
Environmental Services
Printed Name and Title

Approved by: Gregory Crooks M.Eng., P.Eng. Digitally signed by Gregory Crooks M.Eng., P.Eng.
Signature

Gregory Crooks, M.Eng., P.Eng.
Principal, Environmental Services
Printed Name and Title

Table of Contents

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1 Introduction

This Best Management Plan for Fugitive Dust (BMP) was prepared by Stantec Consulting Ltd. (Stantec) on behalf of CBM Aggregates (CBM), a division of St. Mary Cement Inc. (Canada). for the proposed Anthony Pit Site (Anthony Pit), or "the Site". The Anthony Pit will include extraction operations of sand and gravel materials from above and below the groundwater table.

This BMP was prepared in general accordance with the Ontario Ministry of the Environment, Conservation and Parks (MECP) requirements as specified in the Technical Bulletin titled, "*Management Approaches for Industrial Fugitive Dust Sources",* dated February 2017 (MECP, 2017) which at a minimum are:

- Identification of the sources of fugitive dust emissions
- Description of how fugitive dust will be controlled from each identified source
- Schedule by which the plan will be implemented
- Description of how the plan will be implemented, including training of facility personnel
- Description of inspection and maintenance procedures
- Description of record keeping and reporting compliance with the plan

2 Description of Site and Operations

The Site is approximately 18 hectares in size and located at 4454 Victoria Road South, Puslinch, Ontario. The legal description of the Site is Part Lot 22, Concession 8, Geographic Township of Puslinch, Wellington County. The total area to be extracted and rehabilitated is 8.7 hectares. The site entrance will be located at the northeastern corner of the Site via Victoria Road South. There is a residential area located to the west of the extraction area. Additionally, there are several rural residences located near the proposed site entrance.

Internal haul roads will be established to facilitate the movement of aggregate material around the Site. Extracted aggregate material will be transported offsite with haul trucks to CBM's Aberfoyle North Pit and other nearby CBM operations for subsequent processing. An area map showing the Site location, and the proposed extraction footprint is provided in Appendix A.

The equipment and general operations are anticipated to be the following:

- Up to twelve (12) tri-axle haul trucks running 12 hours/ day
  - 40 tonnes loads per truck
  - Loading time up to 4 minutes
  - Up to two (2) haul trucks on site at any one time for loading
- One (1) 980 loader for above water extraction of aggregate
- One (1) dragline or excavator and one (1) loader for below water extraction of aggregate

3 Source Identification

The primary sources of fugitive dust emissions are anticipated to be the following based on the proposed operations at the Anthony Pit:

- Aggregate extraction and material handling
- Movement of vehicles on-site
- Vehicle track-out onto Victoria Road South

The aggregate will be loaded into haul trucks and transported off-site with limited temporary stockpiling of below water material on-site and no processing of the aggregate on-site; therefore, these are not anticipated to be emission sources and have not been included in this BMP. If site operations change in the future, this BMP should be reviewed and updated as appropriate to include new dust emission sources.

4 Fugitive Dust Control Measures for Each Source

The following sections describe the fugitive dust control measures for material handling and on-site movement of vehicles.

4.1 Material Handling

Extraction of aggregate will be conducted using a loader for above water table extraction and a dragline or excavator and a loader for below water table extraction. The loader will transfer the aggregate to the tri-axle haul trucks. It is anticipated that there will be a total of twelve (12) haul trucks with two (2) anticipated to be on-site at any time to be loaded. To minimize fugitive dust from loading the haul trucks, the drop distance between the loader bucket and the bed of the haul truck or the top of the load should be minimized to the extent feasible (ideally less than 1.5 m).

It is proposed that noise barriers including soil berms and noise barrier walls will be constructed along portions of the boundary of area to be licensed for excavation including the above water and below water areas. The location of the proposed noise barriers are shown in the Operational Plan provided in Appendix A. The intent of the noise barriers is to reduce sound levels at residential receptors and the barriers may also provide a partial windbreak under certain meteorological conditions which may reduce the suspension of dust from excavation and loading operations.

4.2 On-Site Access and Haul Road

The haul trucks and other support vehicles will travel within the Site via the access and haul road. Assuming a haul truck can be loaded within 4 minutes (or 0.067 hour), and the twelve haul trucks will be operating for a maximum of 12 hours per day, the anticipated maximum number of loads per day is approximately 180 (12 hr/day divided by 0.067 hr/load). Fugitive dust maybe generated from the haul trucks driving on-site. The following fugitive dust control measures will be implemented:

- A maximum speed limit of 25 km/h will be enforced on all on-site unpaved roads. The speed limit will be posted and communicated as a part of any site-specific orientation.
- Any observed vehicle track-out onto Victoria Road South should be removed as soon as possible.
- On days without significant precipitation (> 1 mm rainfall), wet the entrance road and haul road on a pre-determined schedule or as required by visual observations or complaints.
- Watering may be supplemented with the use of MECP approved chemical dust suppressants if required. Dust suppressants should be applied in accordance with manufacturer/supplier specifications/guidance.
- Surface the roads with a material that has a low silt content.
- Remove spills/deposits on the roads as soon as possible.

- Noise barriers will be installed to reduce the sound levels at residences. The noise barriers may also provide a partial windbreak under certain meteorological conditions that may reduce the suspension of dust from on-site vehicular traffic. Berms should be seeded as soon as practical to limit dust generation from construction.
- Ensure haul trucks are not overloaded and are covered with a secure tarp for above water line aggregate extraction and water is not leaking from the truck box when leaving the site for below ground water level extraction.

5 Implementation Schedule

CBM shall implement the relevant fugitive dust control measures outlined in this BMP upon the start of aggregate extraction.

6 Implementation and Training

A current version of the BMP will be maintained at the appropriate site office. CBM's Environment Manager, Health & Safety Specialist (H&S Specialist) or appropriate delegate will be responsible for the implementation of the BMP and ensuring on-site personnel and haul truck drivers are adequately trained. Formal training will be conducted for all relevant new staff and refresher training will be conducted if the BMP is updated and on a periodic basis.

The appropriate delegate will maintain overall responsibility for ensuring that the requirements of the BMP are followed. The delegate may assign responsibilities to the appropriate CBM staff (Site Manager or site operators) as required. The delegate will conduct an annual review of the BMP and update the requirements on an as needed basis.

7 Inspection and Maintenance Procedures

The following inspection and maintenance procedures will be conducted at the site:

- Regular (minimum daily) visual inspection of the access and haul road.
- Regular inspection of Victoria Road South at the entrance to the Site.

8 Monitoring, Record Keeping and Reporting

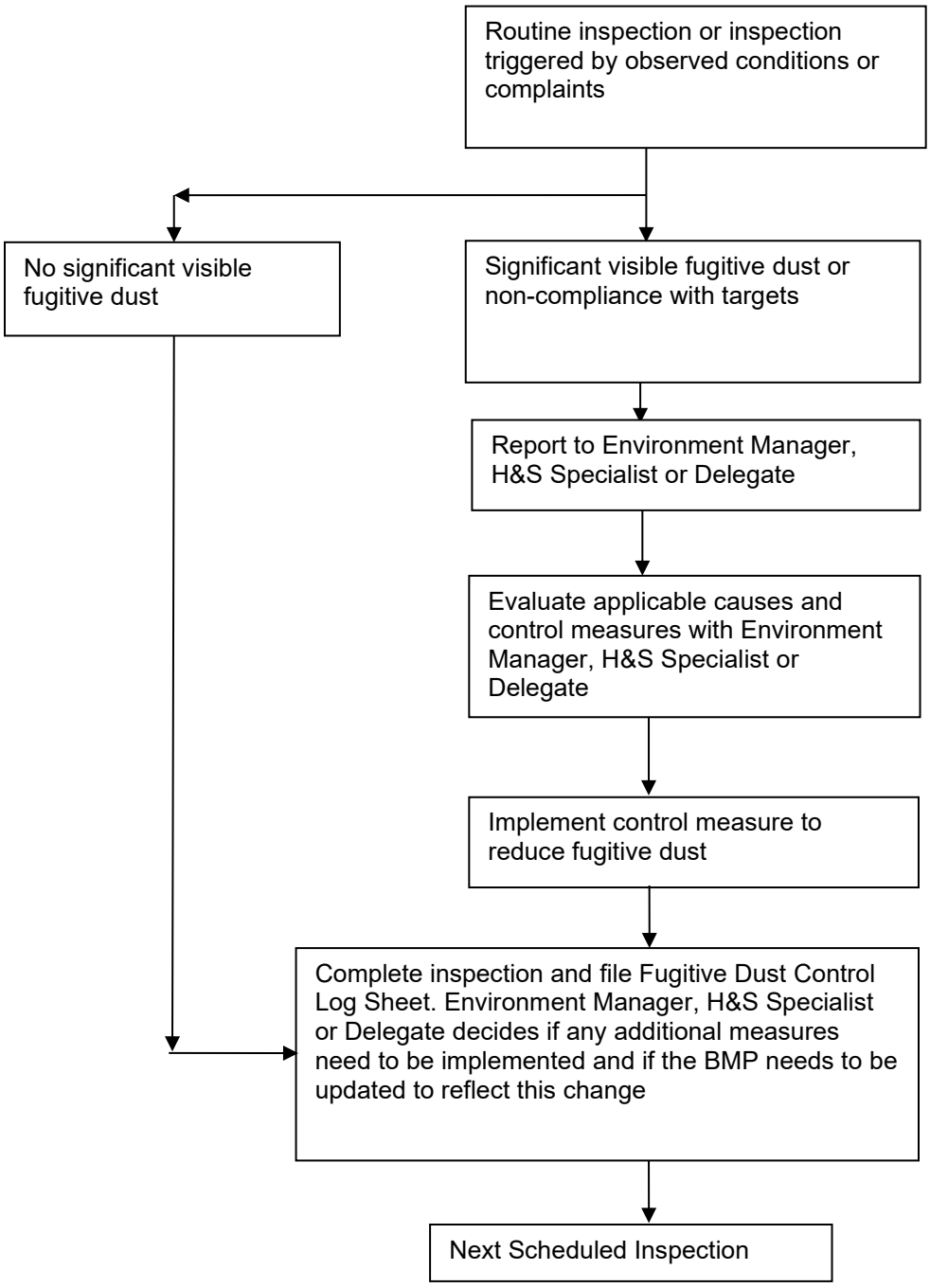
8.1 Monitoring

Formal daily inspections of the access and haul roads, the Site entrance and the active excavation area will be conducted by the Site Supervisor or Area Manager. Inspection findings are to be documented in a Fugitive Dust Control Log Sheet (template provided in Appendix B). The established targets related to fugitive dust are:

- No significant visible fugitive dust from the identified fugitive dust sources during worst-case conditions. For the purpose of this BMP, “significant visible fugitive dust” is visible dust that is observed to move, or is likely to move, off property.
- No public complaints related to fugitive dust.
- No complaints from CBM personnel related to fugitive dust.

If significant visible fugitive dust is observed during an inspection or complaints (from public and/or CBM personnel) are received related to fugitive dust, corrective action will be implemented as outlined in Figure 8-1.

Figure 8-1 Inspection and Complaint Corrective Action



8.2 Recording Keeping and Reporting

The following records will be maintained and kept at the site office:

- A current version of this BMP
- Daily visual inspection record
- Water/dust suppressant application record
- Record of cleaning up any significant spills on the access / haul roads or near the Site entrance
- Fugitive dust control logsheet
- Complaint record (including date/time, description of complaint, weather conditions at the time of the complaint, site operations, corrective actions taken and the notifications)
- Personnel training records

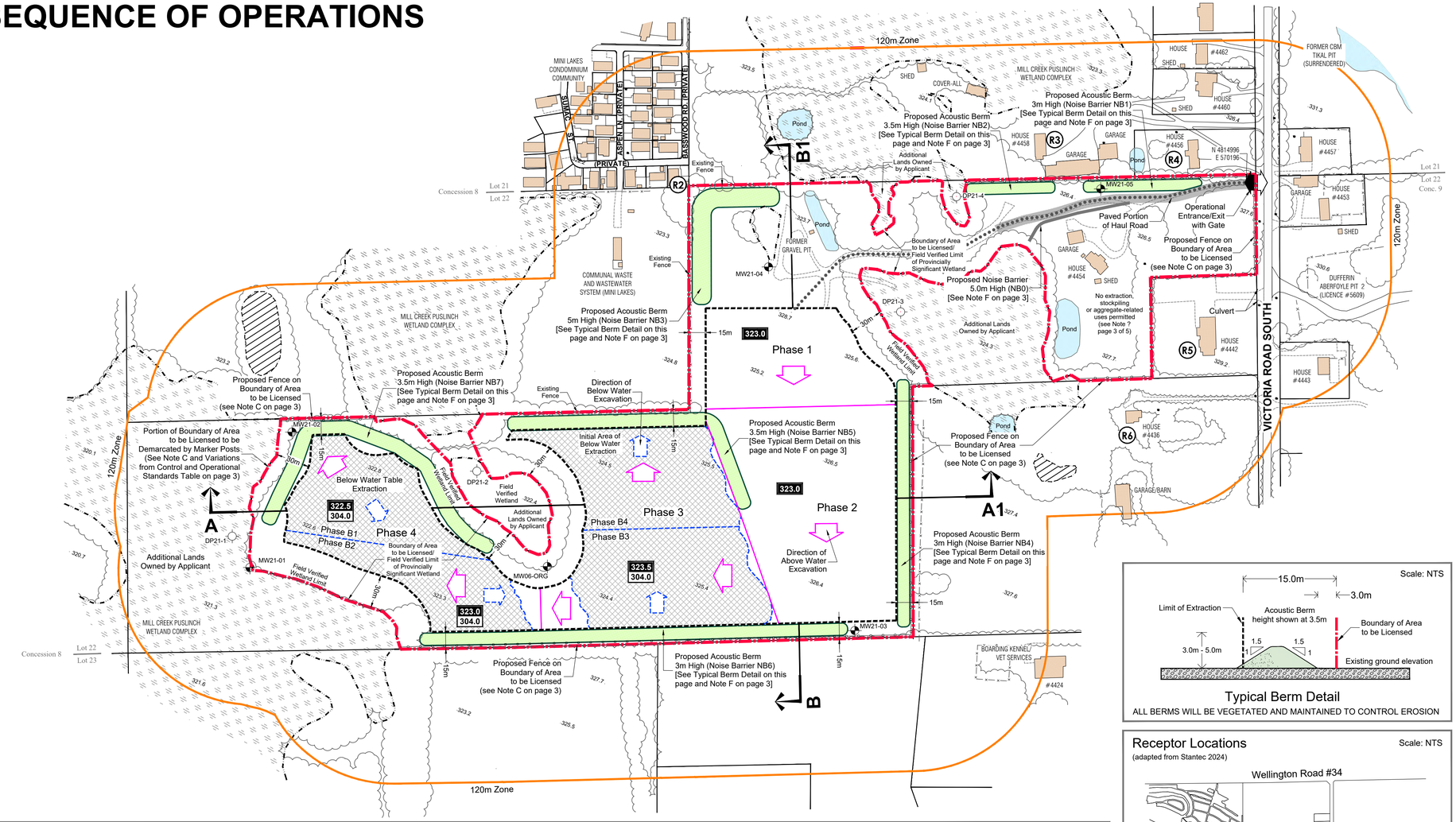
9 References

Ontario Ministry of the Environment, Conservation and Parks (MECP), Management Approaches for Industrial Fugitive Dust Sources, February 2017.

Appendices

Appendix A Operational Plan

SEQUENCE OF OPERATIONS



Phase Notes:

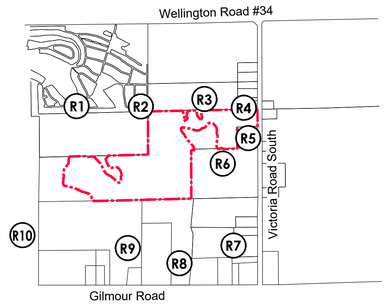
Typical Berm Detail

ALL BERMS WILL BE VEGETATED AND MAINTAINED TO CONTROL EROSION

Receptor Locations

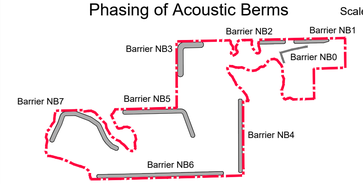
(adapted from Stantec 2024)

Scale: NTS



Phasing of Acoustic Berms

Scale: NTS



Barriers NB0, NB1 and NB2 - Prior to commencement of extraction phases.
Barrier NB3 - Prior to commencement of extraction phases 1/B1.
Barriers NB4, NB5 and NB6 - Prior to commencement of extraction phases B1/B2.
Barriers NB6 and NB7 - Prior to commencement of extraction phases B3/B4.

Source: "CBM Anthony Pit - Noise Impact Report" October 2025
(Source: Stantec Consulting Ltd.)

Legal Description

PART OF LOT 22
CONCESSION 8
(Geographic Township of Puslinch)
TOWNSHIP OF PUSLINCH
COUNTY OF WELLINGTON

Legend

- Boundary of Area to be Licensed
- Additional Lands Owned by Applicant
- Existing Spot Height Elevation — METRES ABOVE SEA LEVEL
- Existing Fence — POST & WIRE FENCE UNLESS OTHERWISE NOTED
- Building/Structure — LOCATION AND USE FOR BUILDINGS ON-SITE AND WITHIN 120m ARE SHOWN ON THIS PAGE
- Existing Vegetation
- Drainage Feature — AS INDICATED
- Provincially Significant Wetland — STANTEC 2024/ ONTARIO GEOHUB
- Wetland — STANTEC 2024
- Unevaluated Wetland — ONTARIO GEOHUB
- MW21-05 / DP21-3 Groundwater Monitor Drive-point Piezometer — STANTEC 2024
- A1 Cross Sections — SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS
- Limit of Excavation — ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES
- Operational Entrance/Exit — MAINTAINED BY A GATE WHICH WILL BE CLOSED WHEN PIT IS NOT IN OPERATION
- Direction of Above Water Excavation — SEE NOTES ON THIS PAGE/PAGE 3 OF 5
- Direction of Below Water Excavation — SEE NOTES ON THIS PAGE/PAGE 3 OF 5
- Area of Below Water Excavation
- 322.5 / 304.0 Elevation — ABOVE WATER DEPTH OF EXTRACTION; MAXIMUM DEPTH OF BELOW WATER EXTRACTION/PIT FLOOR
- Internal Haul Road — INITIAL TYPICAL LOCATION. LOCATION TO VARY AS OPERATIONS PROGRESS
- Proposed Fence — 1.2m HIGH POST & WIRE FENCE UNLESS OTHERWISE NOTED
- Acoustic Berm — SEE "TYPICAL BERM DETAIL" ON THIS PAGE AND NOTES ON PAGE 3 OF 5
- R3 Receptor Locations

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P: 519.576.3650 | WWW.MHBCPLAN.COM

MNR Approval Stamp

Stamp

DRAFT — C. DeRUYTER — THIS MUST NOT BE SIGNED

north

Applicant

VOTORANTIM cimentos / cbm

55 Industrial St. 4th Floor Toronto, Ontario M4G 3W9
Telephone: (416) 696-4411

Applicant's Signature

DRAFT

Andreanne Simard
Director of Lands, Resources and Environment
Votorantim Cimentos North America (VCNA)

Project

Anthony Pit

MNR Licence Reference No.

Pre-approval review:

For Client Review - November 2025

Plan Scale **1:2,000 (Arch D)**

SCALE
0 25 50 100
METRES

Plot Scale 1:2 [1mm = 2 units] MODEL

Drawn By D.G.S.

Checked By N.D.

File No.

File Name

OPERATIONAL PLAN

Drawing No.

2 OF 5

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Appendix B Fugitive Dust Control Log Sheet Template

Fugitive Dust Control Logsheet

CBM Anthony Pit

Name:	**Date:**	**Time:**
Weather Conditions:		
Temperature:	**Wind Speed and Direction:**	

Section 1: Description of Dust Conditions

1. Site Access and Victoria Road South

Significant visible fugitive dust observed?* [ ] Yes [ ] No

Comments:

2. On-site Haul Roads

Significant visible fugitive dust observed?* [ ] Yes [ ] No

Comments:

3. Active Aggregate Extraction and Haul Truck Loading Area

Significant visible fugitive dust observed?* [ ] Yes [ ] No

Comments:

4. Other

Significant visible fugitive dust observed?* [ ] Yes [ ] No

Comments:

* For the purpose of this form, *"significant visible fugitive dust"* is visible dust that is observed to move, or is likely to move, off property.

Section 2: Description of Applied Dust Control Measure(s)

1. Water applied? [ ] Yes [ ] No

Description (where applied, frequency, duration, quantity applied):

2. Dust suppressant product applied? [ ] Yes [ ] No

Description (product applied, where applied, quantity applied):

3. Other Dust Control Measure(s)

Description:

Section 3: Description of Corrective Action(s) and Follow-up (if required):

Appendix C Curriculum Vitae

Greg Crooks M.Eng., P.Eng.

Principal - Environmental Services / Atmospheric Environment

36 years of experience · Toronto, Ontario

Gregory Crooks has over 29-years' experience in air quality modelling and monitoring. Mr. Crooks has carried out ambient air and source monitoring studies for industrial clients that have included site selection, QA/QC of data, remote data acquisition, and software and hardware design and development. He has performed numerous projects involving dense gas dispersion modelling, physical and numerical modelling of dispersion in urban environments and complex terrain, noise monitoring, emission inventory development, and software development. He has been involved in the development of a state-of-the-art dense gas dispersion model that accounts for terrain and obstacle effects. His Master's thesis examined concentration fluctuations in plumes dispersing in complex terrain.

Greg has international air quality experience, having conducted projects in Thailand, United Arab Emirates, Saudi Arabia, Trinidad and Tobago, USA, and Canada. Greg has also served as an expert witness on quantitative risk assessment before the Alberta Energy Utilities Board. Greg has managed and been the lead technical resource on projects with Environment Canada, Health Canada, the Ontario Ministry of Environment and the Canadian Council of Ministers of the Environment regarding air policy issues for several industrial sectors (including pulp and paper, iron and steel, petroleum, lime manufacturing, etc).

Greg also holds a position as an Adjunct Lecturer with the University of Toronto.

EDUCATION

MEng Civil/Environmental Engineering, University of Western Ontario, London, Ontario, 1992

B.E.Sc. Civil Engineering, University of Western Ontario, London, Ontario, 1989

Atmospheric Chemistry, Canadian Institute for Research in Atmospheric Chemistry (CIRAC), Ontario, Ontario, 1997

CALPUFF Training Course, Ontario, Ontario, 1998

Strategic Leadership and Management Course, Markham, Ontario, 2000

MEMBERSHIPS

Member, Professional Engineers Ontario

PROJECT EXPERIENCE

AIR QUALITY

Pollution Control Department | Government of Thailand | Bangkok, Thailand

Sole instructor for a 5-day training course on air quality management (dispersion modelling and ambient monitoring) conducted for the Pollution Control Department.

Jacques Whitford Training Institute

AERMOD dispersion modelling course.

Ontario Power Generation

Instructed a two-day dispersion modelling course.

General Motors of Canada Limited

Instructed a one-day dispersion modelling training course.

Abu Dhabi Marine Operating Company | United Arab Emirates

Sole instructor for an either-day training course on air dispersion modelling and monitoring for the Abu Dhabi Marine Operating Company.

ATMOSPHERIC ENVIRONMENT - ACOUSTICS & LIGHTING

MRI and Angiogram Suite Vibration Testing | Southlake Regional Health Centre | Toronto, Ontario | Senior Reviewer

Senior Reviewer for a vibration assessment of proposed angiogram and MRI suites at the Southlake Regional Health Centre

Noise Assessment and Permitting | University Health Network (UHN) | Toronto, Ontario | Senior Reviewer

Senior reviewer for an acoustic assessment conducted for the Princess Margaret Hospital including noise source measurements, noise modelling, and acoustic impact report for submission in support of an environmental permit application.

Vibration Assessment of CN Railway | CN Rail | Senior Reviewer

Senior reviewer for an assessment of rail vibration for a proposed residential development in Kitchener, ON. The purpose of the assessment was to evacuate vibration impacts with respect to CN vibration criteria due to a neighbouring rail line to provide recommendation for vibration isolation designs to reduce vibration transfer into homes, and prepare a report for review by the CN Railway Company.

Floor Vibration Analysis for Walking Excitation | Kelowna General Hospital

Environmental Noise Assessment | University of Saskatchewan

Sunnybrook Hospital

Preparation of an acoustic assessment report and noise abatement action plan

Crew Change Noise Assessment | CN Rail

Carmeuse Lime

Preparation of an acoustic assessment report

Noise Control Feasibility Study | Humber College | Ontario

EMISSIONS CONTROL

Ontario Hydro Pickering Nuclear Generation Station

Emission inventory and dispersion modelling of redioactive tritium deposition and aerosol formation due to emissions from the Ontario Hydro Pickering Nuclear Generation Station.

Abu Dhabi Water and Electricity Authority

Emission inventory development and dispersion modelling of Abu Dhabi Water and Electricity Authority (ADWEA) member company power plants (including Al Mirfa and Al Taweelah) using the US EPA ISC-PRIME model.

North Atlantic Refining Limited

Emission inventory of heater emissions of SO2, NOx, PM, and VOC's, and VOC emissions from fixed and floating roof storage at the North Atlantic Refining Limited, Come-by-Chance, Newfoundland Oil Refinery. Dispersion modelling of these emissions was performed using the CALMET/CALPUFF meteorological processor and dispersion model.

Iron Ore Company of Canada

Dispersion modelling of point and fugitive particulate emissions for the Iron Ore Company of Canada. Emissions inventories of point and fugitive emissions of PM, PM10 and PM2.5 from the IOCC ore processing facilities/pelletizing plants in Labrador City and Sept-Iles were developed for this project.

General Motors of Canada Ltd.

Dispersion modelling of over 30 contaminants from over 260 stacks on the General Motors of Canada Ltd. Oshawa Facility using REG346, ISCT3, and AERMOD.

GMCL Emission Inventory

A QA/QC review of the GMCL emission inventory was conducted.

Dofasco Steel Facilities | Hamilton, Ontario

Odour modelling of emissions from a wastewater treatment plant located in the Dofasco Steel Facilities in Hamilton using the CALPUFF dispersion model.

Ontario Hydro Generating Station | Thunder Bay, Ontario

Modelling of particulate transport and deposition due to emissions from the Ontario Hydro Generating Station in Thunder Bay.

Ontario Hydro Fossil Fuel Generating Stations

Emission inventory and dispersion modelling and environmental assessment of the impacts of increasing emissions from six Ontario Hydro Fossil Fuel Generating Stations.

TransAlta Energy Corporation | Sarnia, Ontario

Preparation of a Certificate of Approval for a 500 MW cogeneration facility.

Lakeview New Generation Project

Dispersion modelling of the Lakeview New Generation Project, a 550 MW combined cycle power plant operated by ATCO Power.

Newfoundland Trans-shipment Terminal | Come By Chance, Newfoundland

Air quality modelling of NOx and VOC emissions from the Newfoundland Trans-shipment Terminal.

Environmental Assessment of the Hibernia Offshore Oil Platform | Grand Banks Region, Atlantic Ocean

Studied modelled emissions from several sources on the platform and their impact on: helicopter operations and health and safety of workers; and the operation and maintenance of machinery on the platform.

Novacor Polyethylene Plant | Sarnia, Ontario

Physical modelling of the emissions from process bins located in a complex setting at the Novacor Polyethylene Plant, in order to determine equivalent source characteristics for use in regulatory air pollution models.

Brunswick Mining and Smelting Facility | Belledune, New Brunswick

Dispersion modelling of SO2 emissions from the Brunswick Mining and Smelting Facility.

ENVIRONMENTAL ASSESSMENTS

Études environnementales de référence et études d'impact sur l'environnement du projet aurifère Troilus | Troilus Gold Corp | Chibougamau (Québec) | 23-06/- | Ingénieur, Spécialiste - Environnement atmosphérique et acoustique

Joint Panel Review: Marathon Palladium Project | Generation PGM Inc. | Marathon, Ontario, Canada | 2020-present | Technical Lead, Air Quality

Providing technical advice for the environmental assessment for the Joint Review Panel (JRP) Federal-Provincial Environmental Assessment (EA) for the proposed Marathon Palladium Project, an open pit platinum group metal and copper mine located north of Marathon Ontario.

Air Quality Assessment of a Proposed Municipal Solid Waste Incinerator | Regions of Durham-York | Ontario | Project Manager,Technical Lead

Greg was the Technical Lead and Project Manager for the Air Quality Assessment portion of the EA that included as emission inventory, dispersion modelling of the proposed EFW emissions, and dispersion modelling of vehicle traffic on highways and primary/secondary roads in the study area using the CAL3QHCR model. Greg was also responsible for liaison with the Ministry of Environment on air quality issues and presenting assessment results in public information sessions.

Air Quality/Odour Assessment | Proposed Hanover/Walkerton Landfill Expansion EA | Ontario | Technical Lead

Greg was the technical lead on the air quality assessment for the landfill expansion EA, which included; estimating landfill emissions using the LandGem emissions model, dispersion modelling of landfill emissions using the AERMOD dispersion model, assessing the potential for odour impacts, assessing and recommending mitigation measures for litter control and evaluating GHG emissions.

Air Quality Assessment of a Proposed Refinery | Shell Canada Products | Sarnia, Ontario | Technical Lead

As part of the Environmental Assessment for a proposed new refinery in Sarnia Ontario, Greg directed the air quality study and was the lead technical resource. The scope of the assessment included dispersion modelling, emissions inventory, liaison with the government review team and attendance at public information sessions.

Air Quality Assessment | Proposed Jane Street LRT | Toronto, Ontario | Technical Lead

Technical Lead for this study which involved estimating emissions and assessing air quality due to current traffic levels along the proposed LRT route and then evaluating the incremental changes in air quality due to the Project for two future scenarios (build and no-build options). Greg was the technical lead on the project and senior reviewed all submissions to ensure their technical excellence.

Air Quality Assessment | Proposed Weber Street Widening | Kitchener, Ontario | Technical Lead, Senior Reviewer

This study included assessment of current ambient (background) levels of contaminants and changes in the emissions of the contaminants of concern in the study area. The emissions generated from current traffic in conjunction with current ambient air quality conditions were used as incremental change in air quality due to the Project, future emissions were also considered.

ODOUR ASSESSMENT MANAGEMENT

Odour and VOC Dispersion Modelling | Marafiq Waste Water Treatment Plant | Jubail Industrial City, Saudi Arabia

Odour Modelling and Stack Height Optimization | Dofasco Steel Waste Water Treatment Plant | Hamilton, Ontario

Odour and VOC stack testing, odour modelling | Raywall Kitchens | Thornhill, Ontario

Development of a technology benchmarking report for odour mitigation

Odour and VOC stack testing, odour modelling, and odour mitigation evaluation | National Research Council of Canada | Ottawa, Ontario

QUANTITATIVE RISK ASSESSMENT

National Research of Canada*

Quantitative risk assessment of carbon monoxide and hydrogen storage facilities.

Environmental Management Authority* | Port of Spain, Trinidad

Instructor for an introductory course on Quantitative Risk Assessment.

National Gas Company* | Trinidad

Quantitative risk assessment of a proposed liquids pipeline for the National Gas Company.

Compton Petroleum*

Quantitative risk assessment and expert witness testimony (in front of the Alberta Energy Utilities Board) for Compton Petroleum for a sour gas well development near the City of Calgary.

Environmental Management Authority | Trinidad and Tobago

Developmenmt of guidelines to define the scope of a QRA for an environmental assessment.

Abu Dhabi National Oil Company

Quantitative risk assessment of sour gas well project.

Shell Canada

Dense gas modelling of ground level H2S concentrations due to a hydro-cracker quench line failure and reactor depressurization for Shell Canada, Scotford Refinery.

** denotes projects completed with other firms*

Ontario Power Generation

Risk assessment of gas turbine hydrogen leaks for Ontario Power Generation.

Environmental Management Authority | Trinidad and Tobago

Over 20 peer reviews of QRA reports on behalf of the Environmental Management Authority.

** denotes projects completed with other firms*

PUBLICATIONS & WHITEPAPERS

Modelling Emissions from Elevated Cylindrical Bins. *Journal of Air and Waste Management*, 1999.

Overview of the Results of a Source Sampling Study of 20 Pulp And Paper Mills Across Canada and the Challenges Associated with Complex Source Measurement Programs. *Presented at Exfor*, 2004.

Computerised System to Measure and Predict Air Quality for Emission Control. *Presented at the Air & Waste Management Associations 90th Annual Meeting*, 1997.

A Wind Tunnel Study of Mean and Fluctuating Concentrations in a Plume Dispersing over a Two-Dimensional Hill. *Boundary-Layer Meteorology 66*, 1993.

** denotes projects completed with other firms*

Kimberly Ireland B.Sc.(Eng.), P.Eng.

Senior Associate, Senior Environmental Engineer, Atmospheric Sciences

28 years of experience · Stoney Creek, Ontario

Kim has over 25 years of experience in environmental consulting focusing on air quality monitoring and environmental approvals. Kim routinely attends the Ontario Air Practitioners' meetings and workshops convened by the Ministry of the Environment, Conservation and Parks and the Air and Waste Management Association to remain up-to-date with regulatory changes and current practices. Kim has been an Environmental Engineer and/or Project Manager for several ambient air monitoring programs including continuous and non-continuous sampling regimes for short and long-term monitoring periods. She has completed many applications for Environmental Compliance Approvals (Air) as well as Air Emissions Environmental Activity and Sector Registries. She has worked with numerous types of industrial facilities, mining, manufacturing, municipalities, institutions, and agencies. Kim is a Senior Associate with signing authority as well as an Independent and Quality Reviewer for air quality projects. She successfully manages approximately ten projects per year with budgets ranging from $20,000 to $500,000.

EDUCATION

Environmental Engineering Applications (Post Diploma Program), Conestoga College, Kitchener, Ontario, 1998

Baccalaureate in Science in Engineering (Environmental), University of Guelph, Guelph, Ontario, 1997

CERTIFICATIONS & TRAINING

Greenhouse Gas Verification Using ISO 14064 (Cert. # 0000370056), Canadian Standards Association, Stoney Creek, Ontario, 2011

Standard First Aid Level C CPR/AED (Cert. #1167322315), St. John Ambulance, Burlington, Ontario, Canada, 2024

Working at Heights: Principals of Fall Protection, Occupational Safety Group Inc., Hamilton, Ontario, 2018

REGISTRATIONS

Professional Engineer #90530726, Professional Engineers Ontario

MEMBERSHIPS

Member of the Ontario Chapter, Air and Waste Management Association, 1996 - present

PROJECT EXPERIENCE

AIR MONITORING

Ambient Air Quality Monitoring Program for the Port Credit West Village Partners Remediation Project | Kilmer Brownfield Management Limited | Port Credit, Ontario | 2018-2020 | Environmental Engineer and Task Manager

Task Manager for an ambient air quality monitoring program for due diligence purposes during soil excavation during remediation of a benzene and petroleum impacted soil. Monitoring included continuous monitoring of particulate matter with and electronic sampler and meteorological conditions for the duration of site activities (~2 years). Additionally, non-continuous monitoring of Volatile Organic Compounds (VOC) using SUMMA canisters and sampling of benzene using 14-day diffusion tubes. Automated email and phone messages were sent to assigned people to provide notification of equipment issues or when concentrations exceeded preset action levels. Site activities were modified real-time in response air monitoring. Bi-weekly reports were prepared tracking monitoring data and trends.

Ambient Air Quality Monitoring for Carmeuse Lime in Dundas | Carmeuse Lime | Hamilton, Ontario, Canada | Project Manager and Environmental Engineer

Ambient air quality monitoring to support an application for Site Specific Standards for a lime manufacturing facility. Monitoring included Total Suspended Particulate Matter and Calcium Oxide (lime) using a high-volume sampler. A meteorological monitoring station was also used to track weather conditions including wind speed and direction. Results of the monitoring program were used to validate air dispersion modelling.

Baseline Ambient Air Quality Monitoring for the Port Credit West Village Partners Remediation Project | Kilmer Brownfield Management Limited | Mississauga, Ontario, Canada | 2017-2018 | Task Manager and Environmental Engineer

Study to determine baseline air quality prior to remediation activities for a large brownfield redevelopment project. Monitoring included continuous monitoring of particulate matter with and electronic sampler and meteorological conditions. Additionally, non-continuous monitoring of Volatile Organic Compounds (VOC) using SUMMA canisters was completed. A baseline report was prepared summarizing the data and providing recommendations.

** denotes projects completed with other firms*

Ambient Air Monitoring Program for Carmeuse Beachville Operations | Carmeuse Lime | Beachville, Ontario | Project Manager

Multi-year ambient air monitoring program to continuously monitor suspended particulate matter and other parameters such as temperature, humidity, barometric pressure, wind speed and wind direction at three monitoring stations. Three stations were installed on residential and municipal properties to monitor the air quality surrounding the Carmeuse Lime facility.

Ambient Air Quality Monitoring Program for the Durham York Energy Centre | Regional Municipalities of Durham and York | Courtice, Ontario | Environmental Engineer

Project coordination and review of reports for a 3-year ambient air quality monitoring program for combustion contaminants, metals, polycyclic aromatic hydrocarbons and volatile organic compounds and dioxins and furans. Program includes both continuous and non-continuous sampling with multiple instruments.

Port Weller Noise/Dust Baseline Monitoring | St. Lawrence Seaway Management Corporation | St. Catharines, ON | 2018-2019 | Project Manager

Project Manager for ambient air monitoring program to aid in characterizing baseline ambient dust and noise levels in the context of increasing industrial/commercial activities on St. Lawrence Seaway Management Corporation-leased lands.

North Maple Regional Park | City of Vaughan | Vaughan, ON | 2020 - 2024 | Air Quality Engineer

Quality Review of an Ambient Air Monitoring Plan and Dust Management Plan for the construction related activities at the North Maple Regional Park. Review of ambient air monitoring data and recommendations to monitor, mitigate, and manage dust emissions.

Atmospheric Compliance Monitoring for Agnico Eagle (formerly TMAC Resources) Hope Bay Project | Agnico Eagle Mines Ltd | Nunavut, Canada | 2017-Present | Project Manager

Project Manager for ongoing annual compliance reporting regarding ambient air quality and meteorology.

Ambient Air Quality Monitoring Program for Greenstone Gold Mine | 2022-Present | Reviewer

Review of Ambient Air Quality Monitoring Plan. Review of Ambient Air Quality Monitoring Reports. Review of Dust Suppressant Studies.

AIR QUALITY PERMITTING

Environmental Activity and Sector Registry for a Bulk Fuel Terminal | Valero Energy Inc. | Whitby, Ontario | 2018-2019 | Task Manager and Air Quality Engineer

Provided Valero with advice and recommendations to navigate the air and noise approval process for a new facility in Ontario. Preliminary assessment of anticipated emissions to atmosphere for a planned bulk petroleum transfer facility. Air emissions estimates, inventory, air dispersion modelling and preparation of an Emission Summary and Dispersion Modelling Report. Conducting pre-application consultation with regulatory agencies.

Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility for North West Rubber | Brantford, Ontario, Canada | 2012-Present | Project Manager and Environmental Engineer

Prepared initial application for an Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility for a facility which manufacturers rubber mats from rubber crumb. Prepared subsequent annual updates, Annual Written Summaries and applications to amend the approval. Approval package included an Emission Summary and Dispersion Modelling Report and an Acoustic Assessment Report.

Environmental Compliance Approvals for Evolve Recycling | Evolve Recycling | Brantford, ON | 2019-Present | Project Manager and Environmental Engineer

Managed a team of specialists to prepare applications for Environmental Compliance Approvals for Waste, Industrial Sewage Works, as well as Air and Noise for a tire recycling facility. Guided communication with the Ministry of the Environment, Conservation and Parks. Routine progress meetings and communication with agencies.

Environmental Compliance Approval (Air/Noise) for National Steel Car | National Steel Car | Hamilton, ON | 2014-Present | Project Manager and Environmental Engineer

Preparation of an application for Environmental Compliance Approval (Air/Noise) for a rail car manufacturing facility including preparation of an Emission Summary and Dispersion Modelling (ESDM) Report and Acoustic Assessment Report. Guided communication with the Ministry of the Environment, Conservation and Parks (Ministry). Prepared a focused ESDM Report along with development of an Action Plan to reduce off-site contaminant concentrations. On-going environmental consultation and negotiation with the Ministry.

Environmental Activity and Sector Registry for SUEZ | SUEZ Water Technologies & Solutions | Ancaster, ON | 2016-2019 | Project Manager and Environmental Engineer

Prepared an Air Emissions Environmental Activity and Sector Registry for SUEZ which manufacturers ozone water treatment systems. The package included and Emission Summary and Dispersion Modelling (ESDM) Report for welding and ozone emissions. Also prepared subsequent updates to the ESDM Report and updates to the registry.

Amended Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility for Asbury Wilkinson | Asbury Wilkinson Inc. | Burlington, ON | 2018-2019 | Project Manager and Environmental Engineer

Prepared an application for an amended Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility for a facility which recycles and repackages shot used in shot-blasting.

Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility for BASF | BASF Canada Inc. | Brampton, ON | 2018-2020 | Project Manager and Environmental Engineer

Prepared an application for Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility for a facility which produces concrete admixtures.

Environmental Activity and Sector Registry for Komatsu/Joy Global - Magill and Fielding Facilities | Komatsu Mining Corp. Group | Sudbury, ON | 2019 - 2025 | Project Manager and Environmental Engineer

Updated the Emission Summary and Dispersion Modelling Reports for two facilities which produce equipment used in the mining industry. Updated other supporting information and guided client through the registry process. On-going updates to the Emission Summary and Dispersion Modelling Report on an as needed basis.

Application for Certificate of Approval (Air), Tech Coat Inc.* | Guelph, Ontario | 2005-2006 | Project Manager and Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a new dip and spin painting facility.

Application for Consolidated Certificate of Approval (Air) * | ACSYS Technologies | Oshawa, Ontario | 2002 | Air Quality Engineer

Assisted in the preparation of an application for Consolidated Certificate of Approval (Air) and Emission Summary and Dispersion Modelling Report for a large plastic automotive parts manufacturing and painting plant.

Application for Consolidated Certificate of Approval (Air)* | Fabricated Plastics Limited | Vaughan, Ontario | 2002-2004 | Project Manager and Air Quality Engineer

Prepared an application for addendum to a Certificate of Approval (Air) and Emission Summary and Dispersion Modelling Report for a facility that manufactures specialized fiberglass products. Negotiated with the Ministry of the Environment regarding terms and conditions of the certificate.

Application for Certificate of Approval (Air) for Skyway WWTP* | Regional Municipality of Halton | Burlington, Ontario | 2003 | Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for ventilation and process upgrades to the Skyway WWTP.

Assistance for STAC Reporting* | Court Galvanizing Limited | Guelph, Ontario | 2003 | Project Manager and Air Quality Engineer

Assisted in the development of emission factors and completed Reg. 346 dispersion modelling for Court's existing hot-dip galvanizing facility in Guelph as required by the Ministry of the Environment's STAC program.

Application for Certificate of Approval (Air), Court Galvanizing Limited* | Court Galvanizing Limited | Cambridge, Ontario | 2003-2006 | Project Manager and Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a new hot-dip galvanizing facility to be constructed in Cambridge. Preparation of an application for amendment to the approval for minor facility modifications.

Environmental Compliance Audit and Application for Certificate of Approval (Air)* | Gates Canada Inc. | Brantford, Ontario | 2004 | Project Engineer

Prepared Environmental Compliance Audit report based on inspectors' field notes. Prepared an application for Certificate of Approval (Air) for natural gas fired equipment.

Application for Certificate of Approval (Air), Timber Preservatives* | Timber Preservatives | Campbellville, Ontario | 2003-2004 | Air Quality Engineer

Prepared an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a wood preservatives manufacturing facility.

Application for Certificate of Approval (Air) for the Barrie Water Pollution Control Plant* | City of Barrie | Barrie, Ontario | 2003-2006 | Air Quality Engineer

Preparation of a facility-wide application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for the Barrie Water Pollution Control Plant. Coordination and review of an acoustic audit report. Preparation of several addenda related to subsequent facility upgrades and modifications.

Application for Certificate of Approval (Air), Courtice Water Pollution Control Centre* | Courtice, Ontario | 2004-2005 | Air Quality Engineer

Prepared an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a planned new wastewater treatment facility.

Application for Consolidated Certificate of Approval (Air)* | H.L. Blachford Limited | Mississauga, Ontario | 2002-2005 | Project Manager and Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and Emission Summary and Dispersion Modelling Report for a facility that manufactures liquid and powder industrial lubricants. Negotiation with the Ministry of the Environment regarding terms and conditions of the certificate. Also completed a basic noise assessment of this facility to assess compliance with provincial noise guidelines. Follow-up work including coordinating an acoustic audit and source testing to meet the terms and conditions of the certificate.

** denotes projects completed with other firms*

Application for Certificate of Approval (Air), Richardson Foods* | Richardson Foods | St. Marys, Ontario | 2003-2006 | Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a manufacturer of sauces, salad dressings, syrups, and other food products. Preparation of addenda regarding process modifications. Coordination of an acoustic audit and assistance with Operation and Maintenance Manuals to meet the terms and conditions of the certificate.

Permitting Assistance* | INVISTA Canada Ltd. | Maitland and Kingston, Ontario | 2005-2006 | Air Quality Engineer

Review of applications amendments to Certificates of Approval (Air) prepared by INVISTA personnel. Preparation of presentation outlining regulatory requirements regarding air and noise. Provide advice regarding air related issues on an as needed basis.

Application for Certificate of Approval (Air), Shelburne Wood Processing Ltd.* | Shelburne Wood Processing Ltd. | Shelburne, Ontario | 2005-2006 | Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a chemical wood treating facility.

Application for Certificate of Approval (Air), I.K. World Trading Company Ltd.* | I.K. World Trading Company Ltd. | Shelburne, Ontario | 2005-2006 | Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a wood processing facility.

Environmental Assistance; Stelpipe Ltd.* | Welland, Ontario | 2005 | Air Quality Engineer

Review of facility operations, environmental manuals, permits, and approvals to identify opportunities for improvement. Prepared National Pollutant Release Inventory (NPRI) and O.Reg. 127 (ON AIR) reports.

Application for Certificate of Approval (Air), Bramcal Production Inc.* | Barrie, Ontario | 2005-2006 | Air Quality Engineer

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a new polyethylene extrusion and printing process.

Application for Certificate of Approval (Air), Strongco Limited Partnership | Strongco Limited Partnership | Mississauga and Burlington, Ontario | 2008-2009 | Project Manager and Technical Advisor

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for two heavy equipment servicing facilities.

Application for Certificate of Approval (Air), FarmTech | Oshawa, Ontario | 2008-2010 | Project Manager and Technical Advisor

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a proposed ethanol fuel production facility.

Master Builders Solutions Canada, Inc. | Master Builder Solutions Canada, Inc. | Brampton, Ontario | 2021 | Project Manager

Preparation of an application to amend the Environmental Compliance Approval (Air/Noise) with Limited Operational Flexibility including an updated Emission Summary and Dispersion Modelling Report.

Application for Certificate of Approval (Air), St. John's Rehabilitation Hospital | North York, Ontario | 2008-2009 | Project Manager and Technical Advisor

Preparation of an application for Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for boilers, emergency generator and cooling tower at a hospital with numerous air intakes and other sensitive receptors.

Application for a Basic Comprehensive Certificate of Approval (Air) | Chemtrade Logistics Inc | Niagara Falls, Ontario | 2010-2012 | Project Manager and Technical Advisor

Preparation of a Basic Comprehensive Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a chemical transfer facility. Preparation of applications for amendment on an as needed basis.

Application for Certificate of Approval (Air) | Suncor Energy Products Inc. | Sarnia, Ontario | 2008-2009 | Project Manager

Preparation of an application for a new Certificate of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for a new benzene loading system.

Application for Amended Certificates of Approval (Air), Suncor Energy Products | Sarnia, Ontario | 2008-2009 | Project Manager

Preparation of an application for amended Certificates of Approval (Air) and associated Emission Summary and Dispersion Modelling Report for two flares.

Air Quality and Acoustic Assessment for a Proposed Sugar Factory Rebuild | Andrews Sugar Factory | Barbados | 2013-2015 | Task Manager and Engineer

Prepared an air quality assessment report including a cumulative effects assessment for a proposed sugar manufacturing facility located in Barbados. Report submitted to regulatory agency for review and approval of development. Report updated in 2016 based on revised facility design.

** denotes projects completed with other firms*

Application for an Environmental Compliance Approval (Air/Noise) for a Methane Venting System | Toronto District School Board | Toronto, Ontario | Project Manager and Environmental Engineer

Preparation of an application for a new Environmental Compliance Approval including an Emission Summary and Dispersion Modelling Report for subsurface methane gas venting system. Also prepared supporting documents required by the approval such as operation and maintenance plan and procedure to respond to public complaints.

Environmental Compliance Approval for Alternative Low-Carbon Fuels Demonstration Project | Carmeuse Lime (Canada) Limited | Beachville, ON | 2017-2018 | Project Manager and Environmental Engineer

Stantec and Carmeuse prepared the first application in Ontario for approval for an Alternative Low-Carbon Fuel demonstration project under a new regulation, specifically, Ontario Regulation 79/15 - Alternative Low-Carbon Fuels. The application included an Emission Summary and Dispersion Modelling Report and a Carbon Intensity Report.

Environmental Compliance Approval for Full-Scale Use of Alternative Low-Carbon Fuels | Carmeuse Lime (Canada) Ltd. | Dundas, ON | 2021-2023 | Project Manager, Environmental Engineer

Preparation of an application for the full-scale use of Alternative Low-Carbon Fuels (ALCF) under Ontario Regulation 79/15 - Alternative Low-Carbon Fuels for Carmeuse's Dundas Operations. Application included an Emission Summary and Dispersion Modelling Report, Acoustic Assessment Report, Carbon Intensity Report, and public consultation. The public consultation process included a website with project related information, two virtual public meetings and responding to public comments.

Application for Site-Specific Standards | National Steel Car | Hamilton, Ontario | 2023- 2025 | Project Manager, Quality Reviewer

Application for Site-Specific Standards including a Ventilation Study, Refined Emission Summary and Dispersion Modelling Report, Technology Benchmarking Report, Action Plan, and Public Consultation Report. Pre-application consultation with the Ministry of the Environment, Conservation and Parks. Engaged outside consultant to complete Computational Fluid Dynamics Modelling to refine the fugitive emissions through building doors and openings. Coordinated and led the public consultation process including distribution of meeting notice, responding to public comments in-person during public meeting and via email.

INDUSTRIAL AND MUNICIPAL WASTE LANDFILLS

Landfill Gas Collection and Flaring Phasing* | Canadian Waste Services | Burlington, Ontario | 2000 | Project Engineer

Prepared a conceptual design report for the phasing of a landfill gas collection and flaring or utilization system for the proposed Adam’s Mine Landfill near Kirkland Lake.

Emission Summary and Disposal Modelling Report Preparation* | City of Brockville | Brockville, Ontario | 2000-2001 | Project Engineer

Aided in the preparation of an emission summary and dispersion modelling report, and the design of a temporary landfill gas odour control system. Additionally, supervised system construction, and was responsible for system operation, maintenance, and monitoring.

Landfill Gas Collection and Flaring System* | City of Cornwall | Cornwall, Ontario | 1998-2001 | Field Technician

Monitored the permanent landfill gas collection and flaring system at the Cornwall Landfill and balanced the well field as required.

Cornwall Landfill Hydrogeological Study and Operations Report* | City of Cornwall | Cornwall, Ontario | Field Technician and Project Engineer

Conducted GPS and level surveying, collected groundwater samples, and measured groundwater levels as part of a hydrogeological study. Also analyzed the data and prepared an annual operations and monitoring report for the Cornwall Landfill.

Annual Monitoring and Reporting* | Neelon Castings | Sudbury, Ontario | 1999-2001 | Project Engineer

Collected groundwater and surface water samples, analyzed the data, and prepared an Annual Monitoring Report for a waste disposal site.

Landfill Gas Collection and Flaring System Expansion* | City of Cornwall | Cornwall, Ontario | 2001 | Project Engineer

Prepared a conceptual design report for the phasing of a landfill gas collection and flaring system along with associated capital, operation, and maintenance costs. Also assisted in the preparation of detailed design drawings and specifications for the expansion.

Landfill Gas Pumping Test and Conceptual Design* | City of Guelph | Guelph, Ontario | 2001 | Project Engineer

Analyzed test data, modelled landfill gas production, and prepared a conceptual design and budget for a full-scale landfill collection and flaring system at the Eastview Road Landfill.

Landfill Status Report and Financial Assurance Update* | Atlas Specialty Steels | Welland, Ontario | 2002-2003 | Project Engineer

Preparation of a Bi-Annual Status Report for the River Road Landfill, and determination of the necessary financial assurance as required by the Ontario Ministry of the Environment.

Methane Gas Assessment of Bulk Material Landfill | Atomic Energy of Canada Limited | Deep River, Ontario | 2010 | Project Manager

Estimation landfill gas generation over the landfill’s life span and modeling explosive gas concentrations at ground level.

** denotes projects completed with other firms*

Operation and Maintenance Report* | City of Barrie | Barrie, Ontario | 2003-2006 | Project Engineer

Assisted in preparation an operation and maintenance report for the Sandy Hollow Landfill to be submitted to the Ministry of the Environment as part of planned landfill rehabilitation/reclamation project. Report included proposed odour control system and odour monitoring plan.

Landfill Gas Collection and Flaring Test Program* | Canadian Waste Services | Napanee, Ontario | 1998-1999 | Field Technician

Construction, operation, monitoring, and analysis of a temporary landfill gas collection and flaring system test program at the Richmond Landfill near Napanee.

Landfill Gas Extraction System* | Canadian Waste Services | Carp, Ontario | 1998-1999 | Field Technician

Installation and operation of a temporary landfill gas extraction system at the West Carleton Landfill. Responsible for monitoring and maintaining the system as well as compiling and analyzing the test results.

Air Injection System Installation and Monitoring* | Canadian Waste Services | Carp, Ontario | 1998-2000 | Field Supervisor and Project Engineer

Site supervision, installation, operation, and monitoring of an air injection system to prevent landfill gas migration at the West Carleton Landfill. Reviewed data and prepared analysis of system performance.

Conceptual Landfill Gas Extraction and Flaring Systems* | Canadian Waste Services | Ontario | 1999-2000 | Project Engineer

Assisted in the design and report preparation for conceptual landfill gas extraction and flaring systems in Napanee and Carp. Worked on Emission Summaries and Dispersion Modelling reports for Certificates of Approval (Air).

GHG EMISSIONS INVENTORIES / CARBON FOOTPRINTS

Greenhouse Gas Reduction (Energy Management) Plan | Cambridge, Ontario | Project Manager and Air Quality Engineer

Collaboratively worked with the City of Cambridge staff to set GHG reduction targets and develop a reduction action plan. Annual monitoring and reporting progress by updating the corporate GHG Inventory. Received recognition of completion of Federation of Canadian Municipalities (FCM) Partners for Climate Protection (PCP) Milestones 1 to 4.

Region of Waterloo Community-Scale Greenhouse Gas Inventory and Forecast | Region of Waterloo, Ontario | Project Manager and Air Quality Engineer

Developed a community-scale inventory of the Greenhouse Gas emissions for the Region of Waterloo and emissions forecast

GHG Offset Estimation from Combustion of Landfill Gas, Canadian Waste Services* | Various Locations, Ontario

Calculated the potential GHG offset credits available from the combustion of Landfill Gas in flares and engines generating electricity.

Corporate Greenhouse Gas Inventory, Forecast, Reduction Planning and Monitoring Progress | City of Cambridge | Cambridge, Ontario | 2010-Present | Project Manager and Air Quality Engineer

Developed a corporate inventory of the Greenhouse Gas emissions for the Corporation of the City of Cambridge and emissions forecast. Assisted with setting GHG reduction targets and developed a reduction action plan to reduce corporate GHG emissions and energy use. Completed Milestones 1 to 4 under the Federation of Canadian Municipalities, Partners for Climate Protection Program and also reporting energy use under the Ontario Green Energy Act. Annually updated the GHG inventory to track progress towards meeting the reduction goals. Coordinated and held workshops and presented results to City's Greenhouse Gas Task Force. Presented the inventory, reduction plan, and progress updates to the City's Management Committee and City Council.

Region of Waterloo Water Supply and Distribution Operations Master Plan | Region of Waterloo | Kitchener, Ontario, Canada | 2010 | Task Manager and Air Quality Engineer

Developed an inventory of the Greenhouse Gas emissions associated with the operation of the Region’s Water Services Division including Scopes 1, 2, and 3.

GHG VALIDATION VERIFICATION

Verification of Greenhouse Gas Emission Report for 2010 to 2015, Carmeuse Lime | Beachville, Ontario | Project Manager

Completed a verification of the GHG emission report for the Beachville facility in accordance with O.Reg. 452/09 and ISO 14064. Sources included lime kilns, heaters, dryers, coal storage, and other combustion equipment.

Verification of Greenhouse Gas Emission Report for 2011, Cardinal Power | Cardinal, Ontario | Project Manager

Completed a verification of the GHG emission report for a natural gas fired cogeneration facility in accordance with O.Reg. 452/09 and ISO 14064.

Verification of Greenhouse Gas Emission Report for 2011 and 2014, Canadian Gypsum Company | Hagersville, Ontario | Verifier

Completed site visit and internal working paper for verification of the GHG emission report for a gypsum plaster and wallboard manufacturer in accordance with O.Reg. 452/09 and ISO 14064. GHG emissions were from general stationary combustion sources.

** denotes projects completed with other firms*

Verification of Greenhouse Gas Emission Report for 2011 and 2014, Hanson Brick | Burlington, Ontario | Verifier

Completed site visit and internal working paper for verification of the GHG emission report for a brick manufacturing facility in accordance with O.Reg. 452/09 and ISO 14064. GHG emissions source categories were carbonate use and general stationary combustion.

Verification of Greenhouse Gas Emission Report for 2015, Forterra Brick | Burlington, Ontario | Verifier

Completed site visit and internal working paper for verification of the GHG emission report for a brick manufacturing facility in accordance with O.Reg. 452/09 and ISO 14064. GHG emissions source categories were carbonate use and general stationary combustion.

Verification of Greenhouse Gas Emission Report for 2015, McMaster University | Hamilton, Ontario | Verifier

Completed site visit and internal working paper for verification of the GHG emission report for general stationary combustion sources at a university campus and supporting facilities.

AIR QUALITY ASSESSMENT / MANAGEMENT

Air and Noise Regulations Presentation* | General Motors of Canada Limited | Oshawa, Ontario | 2005 | Presenter

Gave presentation to environmental coordinators providing an overview of O.Reg. 346 and O.Reg. 419, and its potential impacts to General Motors' facilities.

Screening Level Air Quality Assessment for an Ethanol Facility | FarmTech | Oshawa, Ontario | 2007 | Project Engineer

Preparation of a screening level assessment of air emissions from a proposed ethanol fuel production facility. Assessment included an inventory of emission sources, assessment of significance, estimation of emission rates, air dispersion modelling using AERMOD and preparing a summary report.

Annual Environmental Reporting | General Kinetics | Brampton, Ontario | Environmental Engineer

Preparation of NPRI, Ontario Regulation 127 and Ontario Regulation 452 (Greenhouse Gas Emission) reports, as required for metal working facility

Annual Environmental Reporting, Dare Foods, Five Facilities | Dare Foods | Environmental Engineer

Preparation of NPRI, Ontario Regulation 127 and Ontario Regulation 452 (Greenhouse Gas Emission Report) reports, as required for five food processing facilities in Ontario and Quebec.

Third Party Review of an Environmental Impact Assessment for Value Creation Inc. Advanced TriStar Facility | Alberta Environment and Sustainable Resource Development | Alberta | Environmental Engineer

Reviewed and provided comment on the emission estimation, air quality assessment and dispersion modelling for a proposed bitumen extraction system compared to project's Terms of Reference.

Third Party Review of an Environmental Impact Assessment for Cenovus Christina Lake Thermal Project | Alberta Environment and Sustainable Resource Development | Alberta | Environmental Engineer

Reviewed and provided comment on the emission estimation, air quality assessment and dispersion modelling for a proposed expansion to the Christina Lake Steam Assisted Gravity Drain bitumen extraction facility compared to project's Terms of Reference.

Overview of Considerations for Greenhouse Gases Provisions from Lime Manufacturing | Environment Canada | Project Manager and Environmental Engineer

Prepared report overviewing research and analysis of the sources of greenhouse gas emissions from the lime sector, potential emission reductions from abatement methods and an analysis of existing regulatory and policy provisions in order to support the development of GHG performance standards applicable to existing and new facilities in the Canadian lime manufacturing sector.

Site-Specific Air Quality Standards | Carmeuse Lime | Dundas, Ontario | 2014-Present | Project Manager and Environmental Engineer

Prepared a refined Emission Summary and Dispersion Modelling Report, a Technology Benchmarking Report, and an Action Plan as part of an application for Site-Specific Standards for particulate matter and calcium oxide from a lime manufacturing facility. Project included preparation of newspaper notice, public notification letters and convening a public open house to present and discuss the reports. Coordinated subsequent annual public open houses to review the implementation of the Action Plan.

Screening-Level Air Quality Assessment for a Proposed Diesel Generating Station | Glossy Bay Marina, St. Vincent and the Grenadines | Task Manager and Environmental Engineer

Prepared a screening-level air quality assessment report as part of an Environmental Impact Assessment for a proposed diesel-fired electricity generating station to provide electricity to a marina and local community.

Evaluation of Benzo(a)Pyrene Emissions | Brantco Asphalt and Material Ltd. | Cambridge, Ontario | Project Manager and Environmental Engineer

Air dispersion modelling to evaluate the Point of Impingement Concentration of B(a)P from an asphalt facility compared to the an updated air quality Standard.

Screening-Level Assessment for Diesel Generators | Nunavut Nukkiksautiit Corp. | Iqaluit, NU, Canada | Project Manager

Air and Noise Emissions Summary for the Weavers Way Sanitary Pumping Station | Houchaimi Holdings Inc. | Town of Mississippi Mills | 2024 | Quality Reviewer

Screening level assessment of air emissions and noise emissions for a proposed emergency generator at a pumping station in a new community development.

** denotes projects completed with other firms*

Air Emissions Assessment for the Dorchester and Thorndale Elevated Storage Tanks | Municipality of Thames Centre | Thames Centre | 2020 | Senior Environmental Engineer

Air and Noise Emission Summary for the Outdoor Generator at the McGillivray Pumping Station | Lake Huron Primary Water Supply System Joint Board of Management | Municipality of North Middlesex | 2023 | Quality Reviewer

Air Emissions and Dispersion Modelling Assessment – Conservation Drive and Beaver Creek Sewage Pumping Stations | City of Waterloo | Waterloo, Ontario | 2024 | Quality Reviewer

Air and Noise Screening Level Assessment of the PJ Cecile Pumping Station | Town of Tecumseh | Tecumseh | 2024 | Quality Reviewer

Hope Bay Mine 2025 Operational Update - Air Quality Modelling Study | Agnico Eagle Mines | Hope Bay, Nunavut | 2024-Present | Project Manager and Reviewer

Update to the Air Quality Modelling (CALPUFF) to include planned operational updates for the Hope Bay Mine Site.

BIOSOLIDS ASSESSMENT, MANAGEMENT, AND FACILITIES

Biosolids Land Application Program Audit* | City of Hamilton | Hamilton, Ontario | 2002-2006 | Project Manager and Lead Auditor

Lead Auditor for a program to confirm land application contractor applied sewage biosolids in accordance with regulatory requirements. Information was used to assist in the development of an Environmental Management Program and Standard Operating Procedures.

MINING

Deloro Mine Rehabilitation* | Ministry of the Environment | Kingston, Ontario | 2003-2004 | Project Engineer

Task Manager for four work plans involving installation of groundwater wells, sediment coring and sampling, groundwater sampling, test pitting, and surveying. Coordinated field and office staff as well as laboratories and contractors. Combined value of work plans was $150,000.

COMMUNITY INVOLVEMENT

Leader, Girl Guides of Canada, Hamilton, Ontario, Canada 2012 - Present

Ski Instructor for Disabled Children, Waterloo Region Track 3 Ski Schools, Kitchener, Ontario, Canada 2000 - 2006 and 2022 - Present

EMPLOYMENT HISTORY

CH2M HILL Canada Limited
Environmental Engineer
2002 - 2007 · 5 years

Project Manager and Task Manager for small to medium sized environmental consulting projects. Responsible for written and oral communication with clients, the public, regulatory agencies and government offices. Preparation of project reports and presentations. Tasks included: applications for environmental approvals, environmental sampling, data interpretation, development of alternatives for remediation of contaminated sites, auditing the land application of municipal sewage biosolids on agricultural land.

GRS Comcor Environmental Limited
Environmental Engineer in Training
1998 - 2002 · 4.5 years

Environmental sampling and monitoring of soil, groundwater, surface water and gas at landfill sites, contaminated sites, and industrial sites. Preparation of project reports and client correspondence. Design, construction and monitoring of temporary and permanent landfill gas extraction and control systems. Conducted and prepared reports for Phase I and Phase II Environmental Site Assessments. Preparation of annual operations and monitoring reports for industrial and municipal landfills. Design, construction and testing of a pilot air stripper for removal of trichloroethylene from groundwater followed by design of a full-scale system.

Environment Canada
Laboratory and Field Technician
1996 - 1996 · 0.25 years

Summer student responsibilities included: - Researched the reproductive effects of pulp mill effluent on fish through field and laboratory work - Developed, constructed and tested a flow-through bioassay system used to establish a laboratory protocol for the pulp and paper industry - Responsible for care of fish stick cultures and lab maintenance

Environmental Youth Corps
Environmental Project Worker
1995 - 1995 · 0.25 years

Summer student responsibilities included: - Assessed drinking water quality and septic system operation - Researched and conducted stream assessments with physical measurements and monitoring of watercourses _ Assisted in the completion of a waste audit and flora inventory

Canadian Department of Fisheries and Oceans
Laboratory Technician
1994 - 1994 · 0.25 years

Summer student responsibilities: - Conducted bioassays to determine the acute and chronic toxicity of sediment from contaminated harbours in Lake Ontario - Collected water, sediment, and phytoplankton samples from research vessel and prepared specimens in onboard laboratory - Interpreted laboratory data, developed database, and presented results in reports

** denotes projects completed with other firms*

Jieyu (Emily) Wu B.A.Sc.

Air Quality Scientist

6 years of experience · Markham, Ontario

Emily has been an Air Quality Engineer-in-Training (EIT) at Stantec since January 2024. She holds a Bachelor's degree in Chemical Engineering. In her role at Stantec, Emily conducts air dispersion modeling, ambient air quality monitoring fieldwork, and environmental assessments, and performs data analysis and prepares technical reports for projects related to transportation, railways, and industrial developments. She has strong technical expertise in air monitoring fieldwork, ventilation system design, air contaminant emission estimation, and greenhouse gas quantification. In addition, Emily brings international experience from the United States and China, where she contributed to mining facility ventilation process design and smelter off-gas handling systems.

EDUCATION

Bachelor of Applied Science in Chemical Engineering, University of Toronto, Toronto, Ontario, Canada, 2017

Master of Education, University of Toronto, Toronto, Ontario, Canada, 2021

CERTIFICATIONS & TRAINING

Standard First Aid - CPR A - AED, St. John Ambulance Saint-Jean, Toronto, Ontario, Canada, 2024

eRailSafe Certificate, CN, Toronto, Ontario, Canada, 2024

Working at Heights, Workers Health & Safety Centre, Markham, Ontario, Canada, 2024

Personal Track Safety (PTS), PNR RailWorks Inc., Markham, Ontario, Canada, 2024

Book 7 Training, Ontario Traffic Council, Toronto, Ontario, 2024

Online AERMOD, Lakes Environmental Consultants Inc., Markham, Ontario, 2024

PROJECT EXPERIENCE

AIR MONITORING

Metrolinx Ambient Air Quality Monitoring Program | Metrolinx | Toronto, Ontario, Canada | 2024-2025 | Air Quality Scientist

Conducted ambient air quality monitoring and data analysis during the early and advanced works phases of new subway station construction projects, including continuous monitoring of PM_{10} and $PM_{2.5}$ and non-continuous sampling of TVOCs, PAHs, and silica. Performed weekly fieldwork for routine site inspections, equipment calibration, and sample collection, and compiled monitoring results into weekly summary reports.

CN Milton Logistics Hub - Environmental Assessment | Canadian National Railway | Milton, Ontario, Canada | 2025-present | Air Quality Specialist

Ambient air monitoring sampling and annual reporting.

AIR QUALITY COMPLIANCE

National Pollutants Release Inventory Assessment for Laurysen Kitchens | Laurysen Kitchens | Ottawa, Ontario, Canada | 2024 | Air Quality Scientist

Prepared an annual report for the National Pollutant Release Inventory for their cabinet manufacturing plant in Ottawa, Ontario for the 2022 compliance year. Assessed facility wide air emissions and chemical products used for reporting to the NPRI.

National Pollutants Release Inventory Assessment for a Lamination Board Manufacturing Facility* | Arauco Canada Ltd. | New Brunswick, Canada | 2023 | Air Quality Specialist

Assessed facility wide air emission and chemical products and prepared an annual National Pollutant Release Inventory report for a particle and lamination board manufacturing facility for the 2022 compliance year.

Axens Canada Specialty Aluminas Inc. | Brockville, Ontario, Canada | 2024-present | Air Quality Specialist

** denotes projects completed with other firms*

AIR QUALITY ASSESSMENT / MANAGEMENT

Due Diligence Air Quality Assessment for an Emergency Diesel Generator Set | City of Windsor | Windsor, Ontario, Canada | 2024 | Air Quality Scientist

Due diligence air quality assessment for a US EPA Tier-2 (1391 kW) emergency diesel generator set of a pumping station, located in Windsor, Ontario. Responsibilities included estimation of emission rates for primary combustion contaminants (NOx, CO and PMs), prediction of the contaminant concentrations using the AERMOD air dispersion model and preparation of technical memo.

GHG EMISSIONS QUANTIFICATION AND VERIFICATION

Greenhouse Gas Quantification and Reporting for Landfill Site* | City of Lloydminster | Saskatchewan, Canada | 2023 | Air Quality Specialist

Quantified the Greenhouse Gas emissions for the landfill site of the City of Lloydminster for the 2022 compliance year. Calculated facility wide GHG emissions for reporting under Saskatchewan GHG Reporting Regulations and to Environment and Climate Change Canada. GHG emissions were assessed from the landfill gas emissions and the combustion of gasoline, diesel and propane fuels.

Greenhouse Gas Quantification and Reporting for Renewable Energy Generation Facilities * | Pinnacle Renewable Energy | British Columbia, Canada | 2023 | Air Quality Specialist

Quantified the Greenhouse Gas emissions for eight facilities of Pinnacle Renewable Energy Inc. located in British Columbia and Alberta for the 2022 compliance year. Calculated facility wide GHG emissions for reporting under BC GHG Reporting Regulations and the Environment and Climate Change Canada. GHG emissions were assessed from the combustion of natural gas, biomass fuel, diesel fuel and propane fuel.

Greenhouse Gas Quantification and Reporting for Clearwater County Landfill Site* | Clearwater Regional Landfill | Alberta, Canada | 2023 | Air Quality Specialist

Quantified the Greenhouse Gas emissions for the landfill site of Clearwater County in Alberta for the 2022 compliance year. Calculated facility wide GHG emissions for reporting under Alberta GHG Reporting Regulations and the Environment and Climate Change Canada. GHG emissions were assessed from the landfill gas emissions, as well as on-site transportation and generator emissions.

EMPLOYMENT HISTORY

Stantec Consulting Ltd.
Air Quality Scientist
Since 2024 · 1 year(s)

AECOM Canada
Air Quality Engineer-In-Training
2021 - 2022 · 1 year(s)

Hatch Ltd.
Off-gas Engineer-In-Training
2017 - 2019 · 2 years

Ontario Ministry of the Environment, Conservation and Parks
Air & Noise ECA Review Engineer Assistant
2015 - 2016 · 1 year(s)

Assisted review engineer on evaluating Air & Noise ECA applications.

** denotes projects completed with other firms*