



BCX
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**Application and Supporting Documentation for an Environmental
Compliance Approval (Air & Noise) with Limited Operational
Flexibility (LOF)**

**Ottawa D-Squared Construction Limited – Ottawa
Hot-Mix Asphalt Plant and Aggregate Depot**

Report to: Ministry of the Environment, Conservation and Parks
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BCX File No. 1350-01.01

Date: April 2020

Executive Summary

This Emission Summary and Dispersion Modelling (ESDM) report is being submitted by Ottawa D-Squared Construction Limited (D-Squared) in support of an Environmental Compliance Approval (ECA) (Air & Noise) with Limited Operational Flexibility (LOF) under Section 9 of the Environmental Protection Act for D-Squared's hot-mix asphalt (HMA) plant which includes an aggregate depot, to be located at 5455 Boundary Road, Navan, Ontario (Facility).

The ESDM Report has been prepared in accordance with Section 26 of the Ontario Regulation 419/05; the Ministry of the Environment, Conservation and Parks (Ministry) *Procedure for Preparing an Emission Summary and Dispersion Modelling Report (March 2018)*, and the Ministry's *Air Dispersion Modelling Guideline for Ontario (February 2017)*.

The purpose of D-Squared's hot-mix asphalt plant will be to provide a local source of hot-mix asphalt¹. HMA will be produced by combining dried aggregate (coarse aggregates and fine aggregates/sand) and reclaimed asphalt pavement (RAP) with heated asphalt cement (AC) in the batch tower or drum mixer. The resulting product will then be either loaded directly into transport trucks for shipment off-site or transferred into the HMA storage silos for temporary storage prior to being loaded into trucks. The HMA plant will typically operate 12 hours per day, 5 days per week. On occasion, the HMA plant may operate up to 24 hours per day to support local construction activities during evenings, nights, and/or weekends.

The identified emissions from the HMA plant will be i) particulate, generated as a result of the handling and processing of aggregate materials; ii) particulate, polyaromatic hydrocarbons (assessed as benzo(a)pyrene [B(a)P]), benzene, and naphthalene, generated as a result of the delivery, storage, and use of asphalt cement; iii) particulate, polyaromatic hydrocarbons (assessed as B(a)P), benzene, naphthalene, and carbon monoxide generated as a result of the storage and transfer of HMA product; iv) particulate, nitrogen oxides, sulphur dioxide, carbon monoxide, polyaromatic hydrocarbons (assessed as B(a)P), benzene, naphthalene, arsenic, lead and nickel from the natural gas or no. 2 oil-fired dryer; and v) particulate, nitrogen oxides, sulphur dioxide, and carbon monoxide from the natural gas or no. 2 oil-fired hot-oil heater servicing the AC storage tanks.

The purpose of D-Squared's aggregate depot will be to receive aggregate material, including RAP and recycled concrete (RC), store it in outdoor stockpiles and ship the aggregate material to customers as needed. The depot will typically operate 12 hours per day, 5 days per week, but may on occasion work up to 24 hours on any given day of the week.

The identified emissions from the aggregate depot will be i) particulate generated as a result of the handling and transfer of aggregate materials; and ii) respirable crystalline silica (RCS) (PM₁₀) (quartz) generated as a result of the handling and transfer of RC.

¹ HMA is a general term used for: Hot-Mix Asphalts, Warm-Mix Asphalts and Cold-Mix Asphalts.



As required, a crushing plant will be used for the purpose of crushing and screening RAP and RC. The crushed RAP material will be used at the Facility as required or shipped offsite. The crushed RC material will be shipped offsite.

The identified emissions from the crushing operations will be i) particulate, generated as a result of the handling and processing of RAP and RC; ii) RCS generated as a result of the handling and processing of RC; and iii) particulate, nitrogen oxides, sulphur dioxide, carbon monoxide and polyaromatic hydrocarbons (assessed as B(a)P) generated as a result of the diesel-fired engine powering the crushing plant.

Fugitive dust emissions from onsite roads and stockpiles will be controlled through D-Squared's site-wide Best Management Practice Plan (BMPP) for fugitive particulate.

Emissions were estimated using a combination of published US Environmental Protection Agency (EPA) emission factors, Ministry emission factors and engineering calculations.

Maximum site-wide emissions were modelled using the Ministry approved U.S. EPA AERMOD system (version 19191) and the corresponding version of the meteorological data. The resulting Point-of-Impingement (POI) concentrations were compared to the standards, guidelines and screening levels in the Ministry Air Contaminants Benchmark (ACB) List, dated April 2018 as presented in Table ES-1.

Since there are sensitive noise receptors within 1000 m of the Facility, an Acoustic Assessment Report (AAR) has been prepared and included under separate cover.



Table ES-1: Emission Summary Table

Contaminant	CAS #	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period Emission Rate	Averaging Period POI Concentration	Ministry POI Limit ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Regulation Schedule #	Percentage of Ministry POI Limit (%)
Particulate Matter	PM	5.37E+00	AERMOD	3.65E+01	24 hr	24 hr	120	Visibility	3	30.4%
Respirable Crystalline Silica (quartz) (PM_{10})	14808-60-7	1.97E-01	AERMOD	2.45E+00	24 hr	24 hr	5	Health	3	49.0%
Nitrogen Oxides	10102-44-0	4.17E+00	AERMOD	5.14E+01	24 hr	24 hr	200	Health	3	25.7%
Nitrogen Oxides	10102-44-0	8.65E+00	AERMOD	1.42E+02	1 hr	1 hr	400	Health	3	35.4%
Sulphur Dioxide	7446-09-5	1.64E+00	AERMOD	2.78E+01	24 hr	24 hr	275	Health & Vegetation	3	10.1%
Sulphur Dioxide	7446-09-5	3.50E+00	AERMOD	1.04E+02	1 hr	1 hr	690	Health & Vegetation	3	15.1%
Carbon Monoxide	630-08-0	1.64E+01	AERMOD	5.75E+02	1 hr	0.5 hr	6000	Health	3	9.6%
Benzo(a)Pyrene	50-32-8	1.63E-07	AERMOD	1.99E-06	Annual	Annual	0.00001	Health	3	19.9%
Benzo(a)Pyrene	50-32-8	1.06E-06	AERMOD	2.01E-05	24 hr	Annual	0.0001	Health	AAV	20.1%
Benzo(a)Pyrene	50-32-8	1.06E-06	AERMOD	6.71E-05	24 hr	24 hr	0.005	Health	URT/DAV	1.3%
Benzene	71-43-2	1.27E-03	AERMOD	4.34E-03	Annual	Annual	0.45	Health	3	1.0%
Benzene	71-43-2	7.14E-03	AERMOD	2.65E-02	24 hr	Annual	4.5	Health	AAV	0.6%
Benzene	71-43-2	7.14E-03	AERMOD	1.24E-01	24 hr	24 hr	100	Health	URT/DAV	0.1%
Naphthalene	91-20-3	1.18E-02	AERMOD	2.05E-01	24 hr	24 hr	22.5	Health	Guideline	0.9%
Naphthalene	91-20-3	1.18E-02	AERMOD	8.26E-01	24 hr	10 min	50	Health	Guideline	1.7%
Arsenic	7440-38-2	9.72E-06	AERMOD	1.70E-04	24 hr	24 hr	0.3	Health	Guideline	0.1%
Lead	7439-92-1	2.60E-04	AERMOD	4.52E-03	24 hr	24 hr	0.5	Health	3	0.9%
Lead	7439-92-1	2.60E-04	AERMOD	1.74E-03	24 hr	30 day	0.2	Health	3	0.9%
Nickel	7440-02-0	2.00E-04	AERMOD	6.20E-04	Annual	Annual	0.04	Health	3	1.6%
Nickel	7440-02-0	1.09E-03	AERMOD	3.36E-03	24 hr	Annual	0.4	Health	AAV	0.8%
Nickel	7440-02-0	1.09E-03	AERMOD	1.90E-02	24 hr	24 hr	2	Health	URT/DAV	0.9%

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1.0 INTRODUCTION AND FACILITY DESCRIPTION

Ottawa D-Squared Construction Limited (D-Squared) retained BCX Environmental Consulting (BCX) to prepare this Emission Summary and Dispersion Modelling (ESDM) Report in support of an Environmental Compliance Approval (ECA) (Air & Noise) with Limited Operational Flexibility (LOF) application under Section 9 of the Environmental Protection Act for their hot-mix asphalt (HMA)¹ plant with an aggregate depot to be located at 5455 Boundary Road, Navan, Ontario (Facility).

A copy of D-Squared's Proof of Legal Name is provided in Appendix A.

The ESDM Report has been prepared in accordance with Section 26 of Ontario Regulation 419/05 (O. Reg. 419), the Ministry's *Procedure for Preparing an Emission Summary and Dispersion Modelling Report (March 2018)* (Ministry Procedure), the Ministry's *Air Dispersion Modelling Guideline for Ontario (February 2017)* (Ministry ADMGO) and the *Basic Comprehensive Certificates of Approval (Air) User Guide (March 2011)*.

The primary North American Industry Classification System (NAICS) code for D-Squared's HMA plant is 324121 – Asphalt Paving Mixture and Block Manufacturing.

1.1 Environmental Activity and Sector Registry Eligibility

Ontario Regulation 1/17 (O. Reg. 1/17) details the eligibility for registration in the Environmental Activity and Sector Registry (EASR) for activities requiring assessment of air emissions (Air Emissions EASR).

Section 2(2) of O. Reg. 1/17 describes facility activities and/or operations that are not eligible for the Air Emissions EASR, thereby requiring the facility to obtain an Environmental Compliance Approval (ECA) under Section 9 of the Environmental Protection Act.

The primary NAICS code for the Facility is 324121 – Asphalt Paving Mixture and Block Manufacturing. Per Section 2(2) item 1 of O. Reg. 1/17 facilities with a primary NAICS code of 32412 are not eligible for the Air Emissions EASR. Therefore, the Facility must be permitted under an ECA.

1.2 Facility Description

The Facility will be located at 5455 Boundary Road, Navan, Ontario. The property is owned by D-Squared.

¹ HMA is a general term used for: Hot-Mix Asphalts, Warm-Mix Asphalts and Cold-Mix Asphalts.



The purpose of D-Squared's HMA plant will be to provide a local source of HMA. The HMA plant will typically operate 12 hours per day, 5 days per week but may on occasion work up to 24 hours per day on any given day of the week.

The purpose of D-Squared's aggregate depot will be to receive aggregate material including reclaimed asphalt pavement (RAP) and recycled concrete (RC), store the material in stockpiles, and ship the material to customers as needed.

As required, a crushing plant will be used for the purpose of crushing and screening RAP and RC. The crushed RAP material will be used at the Facility as required or shipped offsite. The crushed RC material will be shipped offsite.

1.3 Facility Production Limit

The maximum projected 10-year Facility Production Limit for the Facility will be 200,000 tonnes of HMA produced per year, 365,000 tonnes of aggregate/recyclable materials delivered/shipped per year and 400,000 tonnes of aggregate/recyclable materials crushed per year.

1.4 Process Description

A detailed process description is presented in the following sections. Process flow diagrams for the HMA plant (Figure 1A), aggregate depot (Figure 1B), and crushing operations (Figure 1C), and the general site layout (Figure 2) are provided in Appendix B.

1.4.1 Hot-Mix Asphalt Plant

The Facility will operate in either drum process mode or batch process mode. For both modes, aggregate materials (i.e. washed gravel and sand) will be delivered to the Facility and deposited onto stockpiles. A front-end loader will transfer aggregate materials from the stockpiles into the aboveground cold feed bins. The cold feed bins will gravity-feed aggregate materials onto the conveyor below which will transfer the aggregate materials to a screen prior to the transfer of aggregate materials into the dryer via an inclined conveyor. The dryer will remove moisture from the aggregate materials prior to being combined with heated AC and RAP. Particulate emissions from the dryer are controlled by a baghouse². The fines collected in the baghouse are stored in a fines silo and reused in the dryer/mixer or batch tower during HMA production.

RAP will be transferred from the RAP stockpile into the aboveground RAP bins using a front-end loader. RAP will be gravity-fed from the RAP bins to a conveyor and transferred to a screen.

Liquid asphalt cement (AC) will be delivered by tanker truck and stored in the AC storage tanks. The AC tanks will be heated by a natural gas or no. 2 oil-fired hot-oil heater.

² The dust collection system at the Facility is consistent with the dust collection system illustrated in Figure 11.1-2 of US EPA AP-42 Section 11.1 Hot Mix Asphalt Plants, dated March 2004.



When operating in drum mode, RAP will be transferred from the RAP screen, via an inclined conveyor, to the drum mixer to be combined with the heated aggregate materials and liquid AC.

When operating in batch mode, the heated aggregate materials will be transferred into the enclosed batch tower via a bucket elevator. The dried aggregate materials pass through hot screens into hopper bins within the batch tower. RAP and AC are directly transferred into the pugmill and mixed with the aggregate materials prior to being loaded into shipping trucks beneath the batch tower.

1.4.2 Other HMA Plant Operations

Other operations associated with the HMA plant will include a truck box spray rack area, where an aqueous asphalt release agent is applied to the product shipping trucks before each load.

1.4.3 Aggregate Depot Operations

The aggregate depot will receive RAP and RC by truck which is then stored onsite prior to being crushed. Crushed RAP and RC materials will either be used onsite or shipped offsite by truck.

1.4.4 Crushing Plant

The uncrushed material (RAP or RC) will be transferred from the delivery stockpiles into the primary crusher feed bin by a front-end loader. The uncrushed material is transferred from the feed bin to the primary crusher and crushed. The crushed material is screened by the screener prior to being transferred onto a stacking conveyor. The stacking conveyor transfers the crushed material onto the respective stockpile. The crushing plant is powered by one diesel-fired engine.

1.4.5 Other Facility Operations

Other operations associated with the Facility include:

- maintenance activities;
- fuel storage tanks and vehicle fuelling;
- vehicles travelling on onsite roads; and
- wind erosion of stockpiles and from aggregate conveying.

1.5 Summary of Equipment and Operations for which Approval is Sought

Ottawa D-Squared Construction Limited is requesting an ECA with LOF for their proposed facility which will be located at 5455 Boundary Road, Navan, Ontario and will include the following equipment and operations:

A facility that operates a batch and/or drum hot-mix asphalt (HMA) plant and an aggregate depot, consisting of the following processes and support units:

- Aggregate [coarse aggregate, sand, reclaimed asphalt pavement (RAP) and recycled concrete (RC)] receiving, storage, processing and shipping;
- Asphalt cement receiving and storage;
- Aggregate drying; and
- Hot-mix asphalt production, storage and shipping.

Including the Equipment and any other ancillary and support processes and activities, operating at a Facility Production Limit of up to:

- 200,000 tonnes per year of hot-mix asphalt production;
- 365,000 tonnes per year of combined delivery and shipping of aggregate (coarse aggregate, sand, RAP, RC); and
- 400,000 tonnes per year of crushing.

Discharging to the air as described in the Original ESDM Report.

This ESDM Report provides a full site-wide emission inventory and air dispersion modelling exercise for the entire Facility.

2.0 INITIAL IDENTIFICATION OF SOURCES AND CONTAMINANTS

Table 1 below provides a summary of sources and contaminants on site. Negligible sources are discussed in Section 3.0. Significant sources are discussed in Section 4.0.

Table 1: Source and Contaminants Identification Table

Source Information				Expected Contaminants	Included in Modelling?	Calculation Sheet
Source I.D.	Source Description	Material(s)	General Location		Significant? (Yes or No)	
Hot Mix Asphalt Plant						
SP1A	Delivery truck(s) material drop to stockpiles	Coarse Aggregate	See Figure 2	PM RCS	Yes No - Low Silt Material	1
SP1B	Delivery truck(s) material drop to stockpiles	Sand	See Figure 2	PM RCS	Yes No - Low Silt Material	1
B1A	Front-end loader material drop to cold feed bins	Coarse Aggregate	See Figure 2	PM RCS	Yes No - Low Silt Material	1
B1B	Front-end loader material drop to cold feed bins	Sand	See Figure 2	PM RCS	Yes No - Low Silt Material	1
B2	Front-end loader material drop to RAP bins	RAP	See Figure 2	PM RCS	Yes No - Low Silt Material	1
BT1A	Material transfer from cold feed bins to conveyor [C1]	Coarse Aggregate	See Figure 2	PM RCS	Yes No - Low Silt Material	2
BT1B	Material transfer from cold feed bins to conveyor [C1]	Sand	See Figure 2	PM RCS	Yes No - Low Silt Material	2
SC1A	Screening	Coarse Aggregate	See Figure 2	PM RCS	Yes No - Low Silt Material	3
SC1B	Screening	Sand	See Figure 2	PM RCS	Yes No - Low Silt Material	3
BT2A	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Coarse Aggregate	See Figure 2	PM RCS	Yes No - Low Silt Material	2
BT2B	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Sand	See Figure 2	PM RCS	Yes No - Low Silt Material	2
BT3	Material transfer from RAP bins to conveyor [C3]	RAP	See Figure 2	PM RCS	Yes No - Low Silt Material	2
SC2	Screening	RAP	See Figure 2	PM RCS	Yes No - Low Silt Material	3
BT4	Material transfer from inclined conveyor [C4] to mixer	RAP	See Figure 2	PM RCS	Yes No - Low Silt Material	2
AC1	AC storage tank 1	Asphalt Cement	See Figure 2	PM PAH VOC	Yes Yes Yes	5
AC2	AC storage tank 2	Asphalt Cement	See Figure 2	PM PAH VOC	Yes Yes Yes	5
AC3	AC storage tank 3	Asphalt Cement	See Figure 2	PM PAH VOC	Yes Yes Yes	5
AC4	AC storage tank 4	Asphalt Cement	See Figure 2	PM PAH VOC	Yes Yes Yes	5
H1	Natural gas or no. 2 oil-fired hot-oil heater, servicing the AC storage tanks	-	See Figure 2	PM NOx SO ₂ CO	Yes Yes Yes Yes	6
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Baghouse Dust	See Figure 2	PM NO _x SO ₂ CO PAH VOC Metals	Yes Yes Yes Yes Yes Yes Yes	4
DS	Fines silo	Baghouse Dust	See Figure 2	PM	No - Vents through main baghouse	n/a
SF	HMA Silo Filling	HMA	See Figure 2	PM PAH VOC CO	Yes Yes Yes Yes	8
SL	HMA truck loadout from HMA silos	HMA	See Figure 2	PM PAH VOC CO	Yes Yes Yes Yes	9
BL	HMA truck loadout from Batch Tower	HMA	See Figure 2	PM PAH VOC CO	No - Not part of maximum emissions scenario	n/a
Aggregate Depot						
DEPOT-SP1	Delivery truck(s) to stockpiles	Uncrushed RAP	See Figure 2	PM RCS	Yes No - Low Silt Material	1
PPILE-1A	Material drop from product stockpile to shipping truck(s)	Crushed RAP	See Figure 2	PM RCS	Yes No - Low Silt Material	1
DEPOT-SP2	Delivery truck(s) to stockpiles	Uncrushed RC	See Figure 2	PM RCS	Yes Yes	1
PPILE-2A	Material drop from product stockpile to shipping truck(s)	Crushed RC	See Figure 2	PM RCS	Yes Yes	1
Crusher Operations						
CRUSH-B1	Material drop into primary crusher feed bin	Uncrushed RAP	See Figure 2	PM RCS	No - Not part of maximum emissions scenario	n/a
CRUSH-CRU1	Primary Crushing	Uncrushed RAP	See Figure 2	PM RCS	No - Not part of maximum emissions scenario	n/a
CRUSH-SCR1	Primary Screening	Crushed RAP	See Figure 2	PM RCS	No - Not part of maximum emissions scenario	n/a
PPILE-1B	Material drop from stacker to product stockpile	Crushed RAP	See Figure 2	PM RCS	No - Not part of maximum emissions scenario	n/a
CRUSH-B2	Material drop into primary crusher feed bin	Uncrushed RC	See Figure 2	PM RCS	Yes Yes	1
CRUSH-CRU2	Primary Crushing	Uncrushed RC	See Figure 2	PM RCS	Yes Yes	3
CRUSH-SCR2	Primary Screening	Crushed RC	See Figure 2	PM RCS	Yes Yes	3
PPILE-2B	Material drop from stacker to product stockpile	Crushed RC	See Figure 2	PM RCS	Yes Yes	1
CRUSH-GEN1	Diesel-fired engine for the crushing plant	-	See Figure 2	PM NO _x SO ₂ CO PAH	Yes Yes Yes Yes Yes	7
Other Common Activities						
VT	Vehicles travelling on on-site roads	-	See Figure 2	PM	No - Procedure Section 7.4.1	n/a
WE1	Wind erosion of stockpiles	Coarse Aggregate/Sand/ RAP/RC	See Figure 2	PM	No - Procedure Section 7.4.1	n/a
WE2	Wind erosion from conveying	Coarse Aggregate /Sand/RAP/RC	See Figure 2	PM	No - BMP Plan	n/a
MA	Maintenance activities	-	See Figure 2	n/a	No - Exempt per EPA Section 9 (3)(a)	n/a
ST	Vehicle fuel storage tanks	-	See Figure 2	Diesel Fumes	No - Table B-3A	n/a
SR	Truck box spray rack	-	See Figure 2	Aqueous Solution	No - Aqueous Solution	n/a

Notes: - PM = Particulate Matter, RCS = Respirable Crystalline Silica (quartz) (PM₁₀), PAH = Polyaromatic Hydrocarbons, VOC = Volatile Organic Compounds, NO_x = Nitrogen Oxides, SO₂ = Sulphur Dioxide, CO = Carbon Monoxide.
- n/a = Not Applicable, BMP = Best Management Practices.



3.0 ASSESSMENT OF SIGNIFICANCE OF CONTAMINANTS AND SOURCES

As identified in Table 1, some contaminant sources are expected to be negligible and are, therefore, not included in the emission summary or source summary tables. The rationale for defining these sources as insignificant is presented below.

3.1 Sources Exempt from Requiring an ECA (Air & Noise)

Section 9 (3) of the *Environmental Protection Act* identifies equipment and operations which are exempt from requiring an Environmental Compliance Approval (Air & Noise). Item (a) identifies routine maintenance carried out on any plant, structure, equipment, apparatus, mechanism or thing to be exempt. Maintenance activities at the Facility are, therefore, considered exempt.

3.2 Screening Out Sources that Emit Contaminants in Negligible Amounts

Tables B-3A and B-3B in Appendix B of the Ministry Procedure provide examples for excluding insignificant sources that generally emit contaminants in negligible amounts.

Vehicle Fuel Storage Tanks

Table B-3A in Appendix B of the Ministry Procedure identifies onsite storage tanks for vehicle fuels as a specific example of a source that emit contaminants in negligible amounts.

Truck Box Spray Rack Area

HMA trucks will be sprayed with a small quantity of release agent. This application prevents HMA from sticking to the truck and therefore, prolongs the lifespan of the equipment. Due to the small amount of solution and high dilution ratio, emissions of VOCs and odours are, therefore, considered negligible.

3.3 Fugitive Dust Emissions from Onsite Roads and Storage Piles

Fugitive dust emissions from onsite roadways and stockpiles may be excluded from the assessment of compliance with Ministry POI Limits where:

1. the nature of the fugitive dust emissions will be such that they will not be likely to pose a health risk to humans; and
2. the emissions will be relatively small or have been minimized through effective implementation of a fugitive dust control plan, consistent with best management practices.

In Table 7-3 of the Ministry's Procedure, the Ministry identifies asphalt paving mixture and block manufacturing (NAICS Code 324121) as an industry sector where fugitive particulate from onsite

roadways and stockpiles must be included in the ESDM report unless an effective best management practices plan (BMPP) for fugitive particulate is implemented.

D-Squared will be implementing a best management practices plan for fugitive particulate from the Facility. Fugitive sources of dust from onsite roadways, and stockpiles and aggregate conveying are, therefore, considered insignificant at this Facility.

4.0 OPERATING CONDITIONS, EMISSIONS ESTIMATION AND DATA QUALITY

Emission rate calculations for significant sources are described in Appendix C. Emissions associated with AC are estimated using the US EPA TANKS 4.0.9 model. The TANKS output files are presented in Appendix D.

The data quality rating and emission estimation technique are identified for significant sources in the Source Summary Table, Table 2.

4.1 Maximum Emissions Scenario

The Facility emissions have been assessed using one (1) maximum emissions scenario. The maximum emission scenario assumes that the Facility equipment/activities are operating at their maximum daily rates, at the same time. These rates are summarized below.

HMA Plant	Aggregate Depot	Crushing Operations
272 tonnes/hr; 3,000 tonnes/day; 200,000 tonnes/year 24 hours per day, year-round	1,000 tonnes/day 24 hours per day, year-round	2,000 tonnes/day 12 hours per day, year-round

Emission rates for drop points (described in Appendix C) were calculated using the USE EPA-42 Drop Equation (Equation 1 in Section 13.2.4). These emissions have been estimated for each AERMOD wind category using the maximum wind speed for each category. For Category F, the maximum hourly wind speed for the meteorological surface data file was used.

An annual standard assessment was performed for benzo(a)pyrene, benzene, and nickel based on the assumptions for the annual production rate described in the table above and using the methodology outlined in the Ministry “Technical Bulletin: Using assessment values for contaminants with annual air standards”, dated February 2017.

These operating conditions represent very conservative maximum worst-case scenarios. Actual facility maximum operations are not expected to approach these conditions due to material and equipment scheduling logistics.

5.0 SOURCE SUMMARY TABLE

The Source Summary Table (Table 2A and Table 2B) shows the emission rate for each significant contaminant emitted from each significant source. The Ministry's Procedure, Appendix D-Format 2 – Sorted by Source, is used. As required by O. Reg. 419 only significant sources and contaminants are listed in the Source Summary Table.

Table 2A: Source Summary Table – Source Parameters

Source I.D.	Description	Material	Stack Volumetric Flow Rate (m ³ /s)	Stack Exit Temperature (°C)	Stack Inner Diameter (m)	Height Above Grade (m)	Height Above Roof (m)	Source Coordinates (x,y) (m)	Modelled Source
Hot Mix Asphalt Plant									
SP1A	Delivery truck(s) material drop to stockpiles	Coarse Aggregate	n/a	n/a	n/a	n/a	n/a	n/a	APILE1-APILE4
SP1B	Delivery truck(s) material drop to stockpiles	Sand	n/a	n/a	n/a	n/a	n/a	n/a	APILE1-APILE4
B1A	Front-end loader material drop to cold feed bins	Coarse Aggregate	n/a	n/a	n/a	n/a	n/a	n/a	ABIN1-ABIN6
B1B	Front-end loader material drop to cold feed bins	Sand	n/a	n/a	n/a	n/a	n/a	n/a	ABIN1-ABIN6
B2	Front-end loader material drop to RAP bins	RAP	n/a	n/a	n/a	n/a	n/a	n/a	RBIN1-RBIN2
BT1A	Material transfer from cold feed bins to conveyor [C1]	Coarse Aggregate	n/a	n/a	n/a	n/a	n/a	n/a	ACT1-ACT6
BT1B	Material transfer from cold feed bins to conveyor [C1]	Sand	n/a	n/a	n/a	n/a	n/a	n/a	ACT1-ACT6
BT2A	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Coarse Aggregate	n/a	n/a	n/a	n/a	n/a	n/a	ACT7
BT2B	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Sand	n/a	n/a	n/a	n/a	n/a	n/a	ACT7
BT3	Material transfer from RAP bins to conveyor [C3]	RAP	n/a	n/a	n/a	n/a	n/a	n/a	RT1-RT2
BT4	Material transfer from inclined conveyor [C4] to mixer	RAP	n/a	n/a	n/a	n/a	n/a	n/a	RT3
SC1A	Screening	Coarse Aggregate	n/a	n/a	n/a	n/a	n/a	n/a	ASCREEN
SC1B	Screening	Sand	n/a	n/a	n/a	n/a	n/a	n/a	ASCREEN
SC2	Screening	RAP	n/a	n/a	n/a	n/a	n/a	n/a	RSCREEN
AC1	AC storage tank 1	Asphalt Cement	n/a	n/a	n/a	n/a	n/a	n/a	AC1
AC2	AC storage tank 2	Asphalt Cement	n/a	n/a	n/a	n/a	n/a	n/a	AC2
AC3	AC storage tank 3	Asphalt Cement	n/a	n/a	n/a	n/a	n/a	n/a	AC3
AC4	AC storage tank 4	Asphalt Cement	n/a	n/a	n/a	n/a	n/a	n/a	AC4
H1	Natural gas or no. 2 oil-fired hot-oil heater, servicing the AC storage tanks	-	0.6	204	0.3	2.9	n/a	n/a	H1
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Baghouse Dust	30.2	116	1.3	9.1	n/a	n/a	BH
SF	HMA Silo Filling	HMA	n/a	n/a	n/a	n/a	n/a	n/a	SF1-SF3
SL	HMA truck loadout from HMA silos	HMA	n/a	n/a	n/a	n/a	n/a	n/a	SL1-SL3
Aggregate Depot									
DEPOT-SP1	Delivery truck(s) to stockpiles	Uncrushed RAP	n/a	n/a	n/a	n/a	n/a	n/a	DEPSP1
PPILE-1A	Material drop from product stockpile to shipping truck(s)	Crushed RAP	n/a	n/a	n/a	n/a	n/a	n/a	CRUP1
DEPOT-SP2	Delivery truck(s) to stockpiles	Uncrushed RC	n/a	n/a	n/a	n/a	n/a	n/a	DEPSP2
PPILE-2A	Material drop from product stockpile to shipping truck(s)	Crushed RC	n/a	n/a	n/a	n/a	n/a	n/a	CRUP2
Crusher Operations									
CRUSH-B2	Material drop into primary crusher feed bin	Uncrushed RC	n/a	n/a	n/a	n/a	n/a	n/a	CRUB2
CRUSH-CRU2	Primary Crushing	Uncrushed RC	n/a	n/a	n/a	n/a	n/a	n/a	CRUCRU2
CRUSH-SCR2	Primary Screening	Crushed RC	n/a	n/a	n/a	n/a	n/a	n/a	CRUSCR2
PPILE-2B	Material drop from stacker to product stockpile	Crushed RC	n/a	n/a	n/a	n/a	n/a	n/a	CRUP2
CRUSH-GEN1	Diesel-fired engine for the crushing plant	-	3.98	482	0.2	2	n/a	n/a	CRUGEN1

Table 2B: Source Summary Table – Source Emission Data

Source I.D.	Description	Material	Contaminant	CAS #	Averaging Period	Maximum Emission Rate (g/s)	Emission Estimating Technique	Emissions Data Quality	% of Overall Emissions
Hot Mix Asphalt Plant									
SP1A	Delivery truck(s) material drop to stockpiles	Coarse Aggregate	PM	PM	24 hr	8.02E-02	EF	AA	1.5%
SP1B	Delivery truck(s) material drop to stockpiles	Sand	PM	PM	24 hr	8.02E-02	EF	AA	1.5%
B1A	Front-end loader material drop to cold feed bins	Coarse Aggregate	PM	PM	24 hr	8.02E-02	EF	AA	1.5%
B1B	Front-end loader material drop to cold feed bins	Sand	PM	PM	24 hr	8.02E-02	EF	AA	1.5%
B2	Front-end loader material drop to RAP bins	RAP	PM	PM	24 hr	3.88E-02	EF	AA	0.7%
BT1A	Material transfer from cold feed bins to conveyor [C1]	Coarse Aggregate	PM	PM	24 hr	9.72E-04	EF	M	< 0.1%
BT1B	Material transfer from cold feed bins to conveyor [C1]	Sand	PM	PM	24 hr	9.72E-04	EF	M	< 0.1%
BT2A	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Coarse Aggregate	PM	PM	24 hr	9.72E-04	EF	M	< 0.1%
BT2B	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Sand	PM	PM	24 hr	9.72E-04	EF	M	< 0.1%
BT3	Material transfer from RAP bins to conveyor [C3]	RAP	PM	PM	24 hr	3.65E-04	EF	M	< 0.1%
BT4	Material transfer from inclined conveyor [C4] to mixer	RAP	PM	PM	24 hr	3.65E-04	EF	M	< 0.1%
SC1A	Screening	Coarse Aggregate	PM	PM	24 hr	1.53E-02	EF	M	0.3%
SC1B	Screening	Sand	PM	PM	24 hr	1.53E-02	EF	M	0.3%
SC2	Screening	RAP	PM	PM	24 hr	5.73E-03	EF	M	0.1%
AC1	AC storage tank 1	Asphalt Cement	PM	PM	24 hr	7.16E-05	EC	A	< 0.1%
			Benzene	71-43-2	Annual	2.21E-07	EC	A	< 0.1%
			Benzene	71-43-2	24 hr	1.10E-06	EC	A	< 0.1%
			B(a)P	50-32-8	Annual	3.31E-10	EC	A	0.2%
			B(a)P	50-32-8	24 hr	1.65E-09	EC	A	0.2%
AC2	AC storage tank 2	Asphalt Cement	Naphthalene	91-20-3	24 hr	1.30E-06	EC	A	< 0.1%
			PM	PM	24 hr	7.16E-05	EC	A	< 0.1%
			Benzene	71-43-2	Annual	2.21E-07	EC	A	< 0.1%
			Benzene	71-43-2	24 hr	1.10E-06	EC	A	< 0.1%
			B(a)P	50-32-8	Annual	3.31E-10	EC	A	0.2%
AC3	AC storage tank 3	Asphalt Cement	B(a)P	50-32-8	24 hr	1.65E-09	EC	A	0.2%
			B(a)P	50-32-8	24 hr	1.65E-09	EC	A	0.2%
			Naphthalene	91-20-3	24 hr	1.30E-06	EC	A	< 0.1%
			PM	PM	24 hr	7.16E-05	EC	A	< 0.1%
			Benzene	71-43-2	Annual	2.21E-07	EC	A	< 0.1%
AC4	AC storage tank 4	Asphalt Cement	Benzene	71-43-2	24 hr	1.10E-06	EC	A	< 0.1%
			B(a)P	50-32-8	Annual	3.31E-10	EC	A	0.2%
			B(a)P	50-32-8	24 hr	1.65E-09	EC	A	0.2%
			Naphthalene	91-20-3	24 hr	1.30E-06	EC	A	< 0.1%
			PM	PM	24 hr	7.16E-05	EC	A	< 0.1%
H1	Natural gas or no. 2 oil-fired hot-oil heater, servicing the AC storage tanks	-	Naphthalene	91-20-3	24 hr	1.30E-06	EC	A	< 0.1%
			CO	630-08-0	1 hr	1.39E-02	EF	AA	0.2%
			SO2	7446-09-5	24 hr	3.94E-02	EF	AA	1.3%
			SO2	7446-09-5	1 hr	3.94E-02	EF	AA	0.6%
			NOx	10102-44-0	24 hr	5.56E-02	EF	AA	2.4%
			NOx	10102-44-0	1 hr	5.56E-02	EF	AA	1.1%
			PM	PM	24 hr	9.17E-03	EF	AA	< 0.1%
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Baghouse Dust	PM	PM	24 hr	7.29E-01	EF	AA	13.6%
			NOx	10102-44-0	24 hr	2.08E+00	EF	M	50.0%
			NOx	10102-44-0	1 hr	4.53E+00	EF	M	52.4%
			SO2	7446-09-5	24 hr	1.53E+00	EF	M	93.4%
			SO2	7446-09-5	1 hr	3.32E+00	EF	M	95.0%
			CO	630-08-0	1 hr	1.51E+01	EF	M	92.2%
			Benzene	71-43-2	Annual	1.24E-03	EF	AA	97.3%
			Benzene	71-43-2	24 hr	6.77E-03	EF	AA	94.8%
			B(a)P	50-32-8	Annual	3.11E-08	EF	M	19.1%
			B(a)P	50-32-8	24 hr	1.70E-07	EF	M	16.1%
			Naphthalene	91-20-3	24 hr	1.13E-02	EF	M	95.4%
			Arsenic	7440-38-2	24 hr	9.72E-06	EF	M	100.0%
			Lead	7439-92-1	24 hr	2.60E-04	EF	M	100.0%
			Nickel	7440-02-0	Annual	2.00E-04	EF	M	100.0%
			Nickel	7440-02-0	24 hr	1.09E-03	EF	M	100.0%
SF	HMA Silo Filling	HMA	PM	PM	24 hr	2.11E-02	EF	A	0.4%
			CO	630-08-0	1 hr	1.55E-01	EF	A	0.9%
			Benzene	71-43-2	Annual	2.15E-05	EF	A	1.7%
			Benzene	71-43-2	24 hr	2.35E-04	EF	A	3.3%
			B(a)P	50-32-8	Annual	3.22E-08	EF	A	19.7%
			B(a)P	50-32-8	24 hr	3.52E-07	EF	A	33.3%
			Naphthalene	91-20-3	24 hr	2.79E-04	EF	A	2.4%
SL	HMA truck loadout from HMA silos	HMA	PM	PM	24 hr	2.37E-02	EF	A	0.4%
			CO	630-08-0	1 hr	1.77E-01	EF	A	1.1%
			Benzene	71-43-2	Annual	1.19E-05	EF	A	0.9%
			Benzene	71-43-2	24 hr	1.30E-04	EF	A	1.8%
			B(a)P	50-32-8	Annual	4.32E-08	EF	A	26.5%
			B(a)P	50-32-8	24 hr	4.73E-07	EF	A	44.7%
			Naphthalene	91-20-3	24 hr	2.57E-04	EF	A	2.2%
Aggregate Depot									
DEPOT-SP1	Delivery truck(s) to stockpiles	Uncrushed RAP	PM	PM	24 hr	8.63E-02	EF	AA	1.6%
PPILE-1A	Material drop from product stockpile to shipping truck(s)	Crushed RAP	PM	PM	24 hr	8.63E-02	EF	AA	1.6%
DEPOT-SP2	Delivery truck(s) to stockpiles	Uncrushed RC	PM	PM	24 hr	6.01E-01	EF	AA	11.2%
PPILE-2A	Material drop from product stockpile to shipping truck(s)	Crushed RC	RCS	14808-60-7	24 hr	2.74E-02	EF	AA	13.9%
			PM	PM	24 hr	6.01E-01	EF	AA	11.2%
			RCS	14808-60-7	24 hr	2.74E-02	EF	AA	13.9%
Crusher Operations									
CRUSH-B2	Material drop into primary crusher feed bin	Uncrushed RC	PM	PM	24 hr	1.20E+00	EF	M	22.4%
			RCS	14808-60-7	24 hr	5.49E-02	EF	M	27.8%
CRUSH-CRU2	Primary Crushing	Uncrushed RC	PM	PM	24 hr	6.25E-02	EF	AA	1.2%
			RCS	14808-60-7	24 hr	7.08E-03	EF	AA	3.6%
CRUSH-SCR2	Primary Screening	Crushed RC	PM	PM	24 hr	2.89E-01	EF	M	5.4%
			RCS	14808-60-7	24 hr	2.54E-02	EF	M	12.9%
PPILE-2B	Material drop from stacker to product stockpile	Crushed RC	PM	PM	24 hr	1.20E+00	EF	M	22.4%
			RCS	14808-60-7	24 hr	5.49E-02	EF	M	27.8%
CRUSH-GEN1	Diesel-fired engine for the crushing plant	-	PM	PM	24 hr	5.93E-02	EF	AA	1.1%
			NOx	10102-44-0	24 hr	2.03E+00	EF	AA	48.7%
			NOx	10102-44-0	1 hr	4.06E+00	EF	AA	47.0%
			SO2	7446-09-5	24 hr	6.85E-02	EF	M	4.2%
			SO2	7446-09-5	1 hr	1.37E-01	EF	M	3.9%
			CO	630-08-0	1 hr	9.31E-01	EF	AA	5.7%
			B(a)P	50-32-8	Annual	5.54E-08	EF	AA	33.9%
			B(a)P	50-32-8	24 hr	5.54E-08	EF	AA	5.2%



6.0 AIR DISPERSION MODELLING

Air dispersion modelling for the maximum emission scenario was undertaken using the U.S. EPA AERMOD dispersion system. This model calculates maximum hourly concentrations, which are used to provide maximum 1-hour, 24-hour, and annual average concentrations using the appropriate Ministry supplied meteorological data.

6.1 AERMOD

AERMOD is a Ministry approved steady-state Gaussian plume dispersion modelling system that can be used to assess pollutant concentrations from a wide variety of complex industrial settings including multiple stacks, fugitive emissions, and building wake effects. The AERMOD modelling system was developed by the AMS/EPA Regulatory Model Improvement Committee (AERMIC) and consists of two pre-processors (AERMET and AERMAP) and the dispersion model, AERMOD.

AERMET is a general-purpose meteorological pre-processor which uses surface and upper air meteorological conditions together with surface characteristics to calculate the boundary layer parameters needed by AERMOD. AERMAP is the terrain pre-processor used to calculate a representative terrain-influenced height associated with each receptor within the modelling domain.

6.1.1 Dispersion Modelling Input Summary Table

To demonstrate compliance with O. Reg. 419/05, Table 3 provides a description of the way in which the approved dispersion model was used.

6.1.2 Land Use Zoning Designation Plan

The land use zoning plan is provided in Appendix B.

6.1.3 Dispersion Modelling Input and Output files (AERMOD)

The AERMOD input and output files are provided on a CD for the Ministry.

The maximum POI concentrations are shown in Table 5.

6.1.4 AERMOD Meteorology

The Ministry regional hourly surface and upper air meteorological data sets, [Ottaw_forest_19191.SFC] and [Ottawa_forest_19191.PFL], respectively were used for the AERMOD dispersion model. A copy of the wind rose is provided in Appendix E. The wind rose shows the distribution of wind directions and wind speeds from the surface data.

Material Drop Points

As described in Section 4.1, emissions from drop points were calculated for each AERMOD Wind Category.

The Source Summary Table and AERMOD Modelling Parameters Table show the maximum emission rate for Class F Wind Category. The Variable Emission Factor was calculated for each Wind Category (Calculation Sheet 1, Appendix C).

This method has been previously reviewed and approved by the Ministry for other ECA Applications.³

Table 3: Dispersion Modelling Input Summary Table

Relevant Section of Regulation 419	Section Title	Description of How the Approved Dispersion Model was Used
Section 6	Approved Dispersion Models	AERMOD Version 19191
Section 8	Negligible Sources of Contaminant	See Section 3.1
Section 9	Same Structure Contamination	Not Applicable
Section 10	Operating Conditions	See Section 4.1
Section 11	Source of Contaminant Emission Rate	See Appendix C and Table 2B
Section 12	Combined Effect of Assumptions for Operating Conditions and Emission Rates	See Section 4
Section 13	Meteorological Conditions	See Section 6.1.4
Section 14	Area of Modelling Coverage	See Section 6.1.6
Section 15	Stack Height for Certain New Sources of Contaminant	Not Applicable
Section 16	Terrain Data	See Section 6.1.5
Section 17	Averaging Periods	10 minutes, ½-hour, 1-hour, 24-hour, 30 days, and annual

6.1.5 Terrain Data

The terrain data used, cdem_dem_031G, Datum NAD83, UTM Zone 18, was downloaded from Canadian Digital Elevation Model data on the Ministry's website.

6.1.6 Modelling Domain and Receptor Grid

All modelling was undertaken in UTM coordinates as defined in Table 4. The model was based on a receptor grid centered in the site and extended out approximately 1 km from the bounding box

³ Per Jan Kowalczyk, Ministry, November 2016



in all directions. A tiered grid was used for receptor placements and was created based upon the receptor spacing recommended in the Ministry ADMGO.

6.1.7 Source Locations and Parameters

The source physical parameters used in the AERMOD input file are detailed in Table 4B. Figure 3 (Appendix B) shows the locations of all sources that emit contaminants in significant quantities.

6.1.8 Building Downwash

The HMA plant baghouse, hot-oil heater, and the crushing plant's diesel-fired engine were modelled as point sources. As such, building downwash has been considered in the modelling exercise. The building profile input program (BPIP) input file is presented on the CD provided to the Ministry.

Table 4A: AERMOD Modelling Parameters Table – Emission Rates

Source Type	Modelling Source ID	ESDM Source ID	Modelling Source Description	Material	Maximum Daily Emission Rate (g/s)										Maximum Annual Emission Rate (g/s)			Maximum Hourly Emission Rate (g/s)		
					PM	RCS	NOx	SO ₂	B(a)P	Benzene	Naphthalene	Arsenic	Lead	Nickel	B(a)P	Benzene	Nickel	NOx	SO ₂	CO
					24 hr	24 hr	24 hr	24 hr	24 hr	24 hr	24 hr	24 hr	24 hr	24 hr	Annual	Annual	Annual	1 hr	1 hr	1 hr
VOLUME	APILE1	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	4.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	APILE2	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	4.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	APILE3	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	4.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	APILE4	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	4.01E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ABIN1	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	2.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ABIN2	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	2.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ABIN3	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	2.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ABIN4	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	2.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ABIN5	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	2.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ABIN6	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	2.67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT1	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	3.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT2	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	3.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT3	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	3.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT4	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	3.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT5	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	3.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT6	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	3.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ASCREEN	SC1	Aggregate material screening	Coarse Aggregate / Sand	3.06E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	ACT7	BT2	Material transfer from Conveyor C2 to drum dryer	Coarse Aggregate / Sand	1.94E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	RBIN1	B2	RAP material drop into RAP bin	Reclaimed Asphalt Pavement	1.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	RBIN2	B2	RAP material drop into RAP bin	Reclaimed Asphalt Pavement	1.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	RT1	BT3	RAP bin to conveyor C3 transfer	Reclaimed Asphalt Pavement	1.82E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	RT2	BT3	RAP bin to conveyor C3 transfer	Reclaimed Asphalt Pavement	1.82E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	RSCREEN	SC2	RAP material screening	Reclaimed Asphalt Pavement	5.73E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	RT3	BT4	Conveyor C4 to drum dryer transfer	Reclaimed Asphalt Pavement	3.65E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	AC1	AC1	AC tank 1 fugitive emissions	Asphalt Cement	7.16E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-09	1.10E-06	1.30E-06	0.00E+00	0.00E+00	0.00E+00	3.31E-10	2.21E-07	0.00E+00	0.00E+00	0.00E+00
VOLUME	AC2	AC2	AC tank 2 fugitive emissions	Asphalt Cement	7.16E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-09	1.10E-06	1.30E-06	0.00E+00	0.00E+00	0.00E+00	3.31E-10	2.21E-07	0.00E+00	0.00E+00	0.00E+00
VOLUME	AC3	AC3	AC tank 3 fugitive emissions	Asphalt Cement	7.16E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-09	1.10E-06	1.30E-06	0.00E+00	0.00E+00	0.00E+00	3.31E-10	2.21E-07	0.00E+00	0.00E+00	0.00E+00
VOLUME	AC4	AC4	AC tank 4 fugitive emissions	Asphalt Cement	7.16E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-09	1.10E-06	1.30E-06	0.00E+00	0.00E+00	0.00E+00	3.31E-10	2.21E-07	0.00E+00	0.00E+00	0.00E+00
VOLUME	SF1	SF	HMA silo filling	Hot-Mix Asphalt	7.03E-03	0.00E+00	0.00E+00	0.00E+00	1.17E-07	7.84E-05	9.29E-05	0.00E+00	0.00E+00	0.00E+00	1.07E-08	7.16E-06	0.00E+00	0.00E+00	0.00E+00	5.16E-02
VOLUME	SL1	SL	HMA silo loadout	Hot-Mix Asphalt	7.90E-03	0.00E+00	0.00E+00	0.00E+00	1.58E-07	4.35E-05	8.57E-05	0.00E+00	0.00E+00	0.00E+00	1.44E-08	3.97E-06	0.00E+00	0.00E+00	0.00E+00	5.90E-02
VOLUME	SF2	SF	HMA silo filling	Hot-Mix Asphalt	7.03E-03	0.00E+00	0.00E+00	0.00E+00	1.17E-07	7.84E-05	9.29E-05	0.00E+00	0.00E+00	0.00E+00	1.07E-08	7.16E-06	0.00E+00	0.00E+00	0.00E+00	5.16E-02
VOLUME	SL2	SL	HMA silo loadout	Hot-Mix Asphalt	7.90E-03	0.00E+00	0.00E+00	0.00E+00	1.58E-07	4.35E-05	8.57E-05	0.00E+00	0.00E+00	0.00E+00	1.44E-08	3.97E-06	0.00E+00	0.00E+00	0.00E+00	5.90E-02
VOLUME	SF3	SF	HMA silo filling	Hot-Mix Asphalt	7.03E-03	0.00E+00	0.00E+00	0.00E+00	1.17E-07	7.84E-05	9.29E-05	0.00E+00	0.00E+00	0.00E+00	1.07E-08	7.16E-06	0.00E+00	0.00E+00	0.00E+00	5.16E-02
VOLUME	SL3	SL	HMA silo loadout	Hot-Mix Asphalt	7.90E-03	0.00E+00	0.00E+00	0.00E+00	1.58E-07	4.35E-05	8.57E-05	0.00E+00	0.00E+00	0.00E+00	1.44E-08	3.97E-06	0.00E+00	0.00E+00	0.00E+00	5.90E-02
VOLUME	BH	BH	Baghouse servicing the HMA plant	Baghouse Dust	7.29E-01	0.00E+00	2.08E+00	1.53E+00	1.70E-07	6.77E-03	1.13E-02	9.72E-06	2.60E-04	1.09E-03	3.11E-08	1.24E-03	2.00E-04	4.53E+00	3.32E+00	1.51E+01
VOLUME	H1	H1	Hot oil heater for heating AC	-	9.17E-03	0.00E+00	5.56E-02	3.94E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.56E-02	3.94E-02	1.39E-02
VOLUME	DEPSP1	DEPOT-SP1	Uncrushed RAP material drop to delivery stockpiles	Uncrushed RAP	8.63E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POINT	DEPSP2	DEPOT-SP2	Uncrushed RC material drop to delivery stockpiles	Uncrushed RC	6.01E-01	2.74E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
POINT	CRUP1	PPILE-1	Crushed RAP material drops to stockpile and shipping truck	Crushed RAP	8.63E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	CRUB2	CRUSH-B2	Uncrushed RC material drop into crusher feed bin	Uncrushed RC	1.20E+00	5.49E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	CRUCRU2	CRUSH-CRU2	Crushing plant primary crusher	Uncrushed RC	6.25E-02	7.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	CRUSCR2	CRUSH-SCR2	Crushing plant screener	Crushed RC	2.89E-01	2.54E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	CRUP2	PPILE-2	Crushed RC material drop from stacker product stockpile	Crushed RC	1.80E+00	8.23E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOLUME	CRUGEN1	CRUSH-GEN1	Crushing plant engine	-	5.93E-02	0.00E+00	2.03E+00	6.85E-02	5.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.54E-08	0.00E+00	0.00E+00	4.06E+00	1.37E-01	9.31E-01

Notes - Base elevations were extracted from AERMAP.
- All sources are elevated (Release Height > 0).
- Emissions for material drop points (highlighted in blue) have been calculated for the six AERMOD wind categories. Emission rates for Category F are presented in this table. Variable emission multipliers are presented in Calculation Sheet 1.



Table 4B: AERMOD Modelling Parameters Table – Source Parameters

Source Type	Modelling Source ID	ESDM Source ID	Modelling Source Description	Material	Base Elevation	Release Height Above Grade	Stack Inner Diameter	Exit Velocity	Stack Exit Temperature	Stack Release Type	Initial Lateral Dimension	Initial Vertical Dimension	Length of Side	X Coordinate	Y Coordinate
					m	m	m	m/s	K		m	m	m	m	m
VOLUME	APILE1	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	2.3	0.5	10.0	465810.7	5021138.9
VOLUME	APILE2	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	79.6	1.0	-	-	-	-	2.3	0.5	10.0	465805.4	5021151.7
VOLUME	APILE3	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	80.0	1.0	-	-	-	-	2.3	0.5	10.0	465800.0	5021165.3
VOLUME	APILE4	SP1	Aggregate material drop into stockpiles	Coarse Aggregate / Sand	80.0	1.0	-	-	-	-	2.3	0.5	10.0	465794.0	5021178.1
VOLUME	ABIN1	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	79.0	4.3	-	-	-	-	1.2	2.0	5.3	465782.1	5021110.3
VOLUME	ABIN2	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	79.0	4.3	-	-	-	-	1.2	2.0	5.3	465777.7	5021108.6
VOLUME	ABIN3	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	79.0	4.3	-	-	-	-	1.2	2.0	5.3	465773.5	5021106.6
VOLUME	ABIN4	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	79.0	4.3	-	-	-	-	1.2	2.0	5.3	465769.1	5021104.8
VOLUME	ABIN5	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	79.0	4.3	-	-	-	-	1.2	2.0	5.3	465765.1	5021103.0
VOLUME	ABIN6	B1	Aggregate material drop into cold-feed bin	Coarse Aggregate / Sand	79.0	4.3	-	-	-	-	1.2	2.0	5.3	465760.8	5021101.2
VOLUME	ACT1	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	0.6	2.0	2.7	465782.1	5021110.3
VOLUME	ACT2	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	0.6	2.0	2.7	465777.7	5021108.6
VOLUME	ACT3	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	0.6	2.0	2.7	465773.5	5021106.6
VOLUME	ACT4	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	0.6	2.0	2.7	465769.1	5021104.8
VOLUME	ACT5	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	0.6	2.0	2.7	465765.1	5021103.0
VOLUME	ACT6	BT1	Aggregate material transfer from cold-feed bin to conveyor C1	Coarse Aggregate / Sand	79.0	1.0	-	-	-	-	0.6	2.0	2.7	465760.8	5021101.2
VOLUME	ASCREEN	SC1	Aggregate material screening	Coarse Aggregate / Sand	79.0	2.1	-	-	-	-	1.4	2.0	6.0	465747.8	5021095.8
VOLUME	ACT7	BT2	Material transfer from Conveyor C2 to drum dryer	Coarse Aggregate / Sand	79.0	7.8	-	-	-	-	0.5	3.6	2.0	465724.8	5021086.3
VOLUME	RBIN1	B2	RAP material drop into RAP bin	Reclaimed Asphalt Pavement	79.0	4.3	-	-	-	-	1.4	2.0	6.0	465727.2	5021115.2
VOLUME	RBIN2	B2	RAP material drop into RAP bin	Reclaimed Asphalt Pavement	79.0	4.3	-	-	-	-	1.4	2.0	6.0	465720.7	5021112.4
VOLUME	RT1	BT3	RAP bin to conveyor C3 transfer	Reclaimed Asphalt Pavement	79.0	1.0	-	-	-	-	0.7	2.0	3.0	465727.2	5021115.1
VOLUME	RT2	BT3	RAP bin to conveyor C3 transfer	Reclaimed Asphalt Pavement	79.0	1.0	-	-	-	-	0.7	2.0	3.0	465720.7	5021112.4
VOLUME	RSCREEN	SC2	RAP material screening	Reclaimed Asphalt Pavement	79.0	1.8	-	-	-	-	0.8	1.7	3.3	465705.0	5021106.6
VOLUME	RT3	BT4	Conveyor C4 to drum dryer transfer	Reclaimed Asphalt Pavement	79.0	7.8	-	-	-	-	0.5	3.6	2.0	465714.2	5021083.9
VOLUME	AC1	AC1	AC tank 1 fugitive emissions	Asphalt Cement	79.0	13.4	-	-	-	-	0.9	6.2	3.8	465687.0	5021068.2
VOLUME	AC2	AC2	AC tank 2 fugitive emissions	Asphalt Cement	79.0	13.4	-	-	-	-	0.9	6.2	3.8	465691.7	5021070.2
VOLUME	AC3	AC3	AC tank 3 fugitive emissions	Asphalt Cement	79.0	13.4	-	-	-	-	0.9	6.2	3.8	465696.5	5021072.2
VOLUME	AC4	AC4	AC tank 4 fugitive emissions	Asphalt Cement	79.0	13.4	-	-	-	-	0.9	6.2	3.8	465701.2	5021074.3
VOLUME	SF1	SF	HMA silo filling	Hot-Mix Asphalt	79.0	19.9	-	-	-	-	0.5	9.2	2.3	465736.1	5021065.6
VOLUME	SL1	SL	HMA silo loadout	Hot-Mix Asphalt	79.0	4.1	-	-	-	-	1.0	9.2	4.3	465736.1	5021065.6
VOLUME	SF2	SF	HMA silo filling	Hot-Mix Asphalt	79.0	19.9	-	-	-	-	0.5	9.2	2.3	465740.4	5021067.5
VOLUME	SL2	SL	HMA silo loadout	Hot-Mix Asphalt	79.0	4.1	-	-	-	-	1.0	9.2	4.3	465740.4	5021067.5
VOLUME	SF3	SF	HMA silo filling	Hot-Mix Asphalt	79.0	19.9	-	-	-	-	0.5	9.2	2.3	465744.6	5021069.2
VOLUME	SL3	SL	HMA silo loadout	Hot-Mix Asphalt	79.0	4.1	-	-	-	-	1.0	9.2	4.3	465744.6	5021069.2
VOLUME	BH	BH	Baghouse servicing the HMA plant	Baghouse Dust	79.0	9.1	1.3	23.4	388.7	VERTICAL	-	-	-	465737.1	5021099.3
VOLUME	H1	H1	Hot oil heater for heating AC	-	79.0	2.9	0.3	9.1	477.6	CAPPED	-	-	-	465688.3	5021076.8
VOLUME	DEPSP1	DEPOT-SP1	Uncrushed RAP material drop to delivery stockpiles	Uncrushed RAP	79.6	1.0	-	-	-	-	3.5	0.5	15.0	465771.7	5021150.5
POINT	DEPSP2	DEPOT-SP2	Uncrushed RC material drop to delivery stockpiles	Uncrushed RC	80.0	1.0	-	-	-	-	3.5	0.5	15.0	465762.0	5021174.2
POINT	CRUP1	PPILE-1	Crushed RAP material drops to stockpile and shipping truck	Crushed RAP	79.3	2.0	-	-	-	-	3.5	0.5	15.0	465715.1	5021146.0
VOLUME	CRUB2	CRUSH-B2	Uncrushed RC material drop into crusher feed bin	Uncrushed RC	79.9	4.0	-	-	-	-	1.3	1.9	5.7	465753.7	5021152.0
VOLUME	CRUCRU2	CRUSH-CRU2	Crushing plant primary crusher	Uncrushed RC	79.8	2.0	-	-	-	-	1.9	1.9	8.0	465751.4	5021150.8
VOLUME	CRUSCR2	CRUSH-SCR2	Crushing plant screener	Crushed RC	79.6	2.0	-	-	-	-	1.9	1.9	8.0	465744.8	5021148.6
VOLUME	CRUP2	PPILE-2	Crushed RC material drop from stacker product stockpile	Crushed RC	80.0	2.0	-	-	-	-	3.5	0.5	15.0	465714.6	5021162.2
VOLUME	CRUGEN1	CRUSH-GEN1	Crushing plant engine	-	80.0	2.0	0.2	126.8	755.4	HORIZONTAL	-	-	-	465749.7	5021163.9

Notes - Base elevations were extracted from AERMAP.
- All sources are elevated (Release Height > 0).
- Emissions for material drop points (highlighted in blue) have been calculated for the six AERMOD wind categories. Emission rates for Category F are presented in this table. Variable emission multipliers are presented in Calculation Sheet 1.



7.0 EMISSION SUMMARY TABLE AND CONCLUSIONS

The Emission Summary Table (Table 5) shows the predicted maximum POI concentrations from all sources compared to the standards, guidelines and screening levels in the Ministry Air Contaminants Benchmark (ACB) List, dated April 2018. As it can be seen from the Emission Summary Table, all contaminants are below the allowable limits.

Table 5: Emission Summary Table

Contaminant	CAS #	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period Emission Rate	Averaging Period POI Concentration	Ministry POI Limit ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Regulation Schedule #	Percentage of Ministry POI Limit (%)
Particulate Matter	PM	5.37E+00	AERMOD	3.65E+01	24 hr	24 hr	120	Visibility	3	30.4%
Respirable Crystalline Silica (quartz) (PM_{10})	14808-60-7	1.97E-01	AERMOD	2.45E+00	24 hr	24 hr	5	Health	3	49.0%
Nitrogen Oxides	10102-44-0	4.17E+00	AERMOD	5.14E+01	24 hr	24 hr	200	Health	3	25.7%
Nitrogen Oxides	10102-44-0	8.65E+00	AERMOD	1.42E+02	1 hr	1 hr	400	Health	3	35.4%
Sulphur Dioxide	7446-09-5	1.64E+00	AERMOD	2.78E+01	24 hr	24 hr	275	Health & Vegetation	3	10.1%
Sulphur Dioxide	7446-09-5	3.50E+00	AERMOD	1.04E+02	1 hr	1 hr	690	Health & Vegetation	3	15.1%
Carbon Monoxide	630-08-0	1.64E+01	AERMOD	5.75E+02	1 hr	0.5 hr	6000	Health	3	9.6%
Benzo(a)Pyrene	50-32-8	1.63E-07	AERMOD	1.99E-06	Annual	Annual	0.00001	Health	3	19.9%
Benzo(a)Pyrene	50-32-8	1.06E-06	AERMOD	2.01E-05	24 hr	Annual	0.0001	Health	AAV	20.1%
Benzo(a)Pyrene	50-32-8	1.06E-06	AERMOD	6.71E-05	24 hr	24 hr	0.005	Health	URT/DAV	1.3%
Benzene	71-43-2	1.27E-03	AERMOD	4.34E-03	Annual	Annual	0.45	Health	3	1.0%
Benzene	71-43-2	7.14E-03	AERMOD	2.65E-02	24 hr	Annual	4.5	Health	AAV	0.6%
Benzene	71-43-2	7.14E-03	AERMOD	1.24E-01	24 hr	24 hr	100	Health	URT/DAV	0.1%
Naphthalene	91-20-3	1.18E-02	AERMOD	2.05E-01	24 hr	24 hr	22.5	Health	Guideline	0.9%
Naphthalene	91-20-3	1.18E-02	AERMOD	8.26E-01	24 hr	10 min	50	Health	Guideline	1.7%
Arsenic	7440-38-2	9.72E-06	AERMOD	1.70E-04	24 hr	24 hr	0.3	Health	Guideline	0.1%
Lead	7439-92-1	2.60E-04	AERMOD	4.52E-03	24 hr	24 hr	0.5	Health	3	0.9%
Lead	7439-92-1	2.60E-04	AERMOD	1.74E-03	24 hr	30 day	0.2	Health	3	0.9%
Nickel	7440-02-0	2.00E-04	AERMOD	6.20E-04	Annual	Annual	0.04	Health	3	1.6%
Nickel	7440-02-0	1.09E-03	AERMOD	3.36E-03	24 hr	Annual	0.4	Health	AAV	0.8%
Nickel	7440-02-0	1.09E-03	AERMOD	1.90E-02	24 hr	24 hr	2	Health	URT/DAV	0.9%

- AAV = Annual Assessment Value; URT = Upper Risk Threshold; DAV = Daily Assessment Value.

- For each annual assessment value and annual standard, modelling was performed for each of the 5 meteorological years, and the maximum result of the 5 runs was compared to the assessment value and Ministry POI standard (as per Ministry's Technical Bulletin Methodology for Using "assessment Values" for Contaminants with Annual Air Standards (dated March 8, 2017).

8.0 SOURCES OF NOISE

Since there are sensitive noise receptors within 1000 m of the Site, an Acoustic Assessment Report (AAR) is presented under separate cover.

Appendix A

Proof of Legal Name



Request ID: 023962888
Demande n°:
Transaction ID: 074004509
Transaction n°:
Category ID: CT
Catégorie:

Province of Ontario
Province de l'Ontario
Ministry of Government Services
Ministère des Services gouvernementaux

Date Report Produced: 2019/12/12
Document produit le:
Time Report Produced: 15:29:48
Imprimé à:

Certificate of Incorporation Certificat de constitution

This is to certify that

Ceci certifie que

OTTAWA D-SQUARED ASPHALT LIMITED

Ontario Corporation No.

Numéro matricule de la personne morale en
Ontario

002731858

is a corporation incorporated,
under the laws of the Province of Ontario.

est une société constituée aux termes
des lois de la province de l'Ontario.

These articles of incorporation
are effective on

Les présents statuts constitutifs
entrent en vigueur le

DECEMBER 12 DÉCEMBRE, 2019

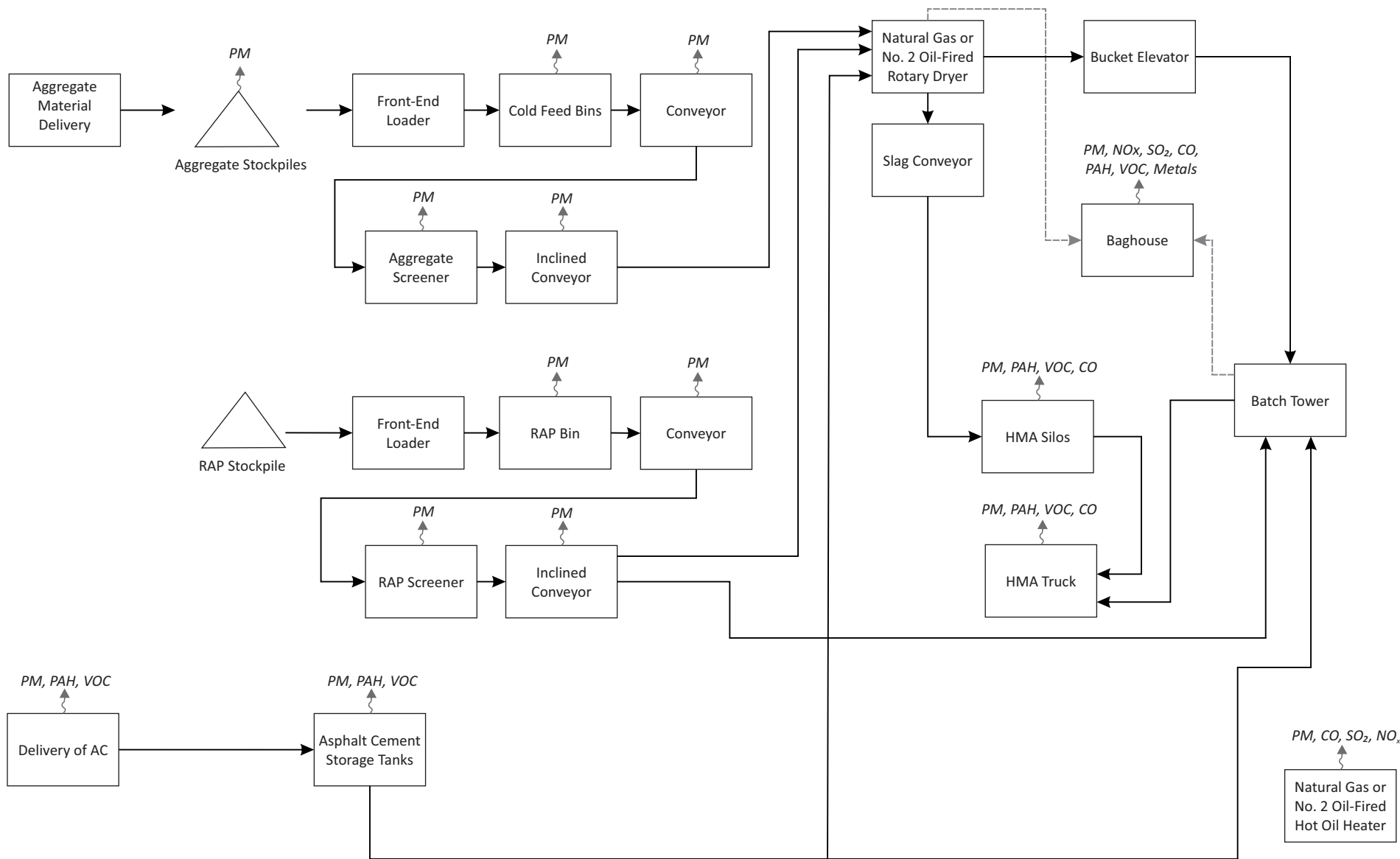



Director/Directeur
Business Corporations Act/Loi sur les sociétés par actions

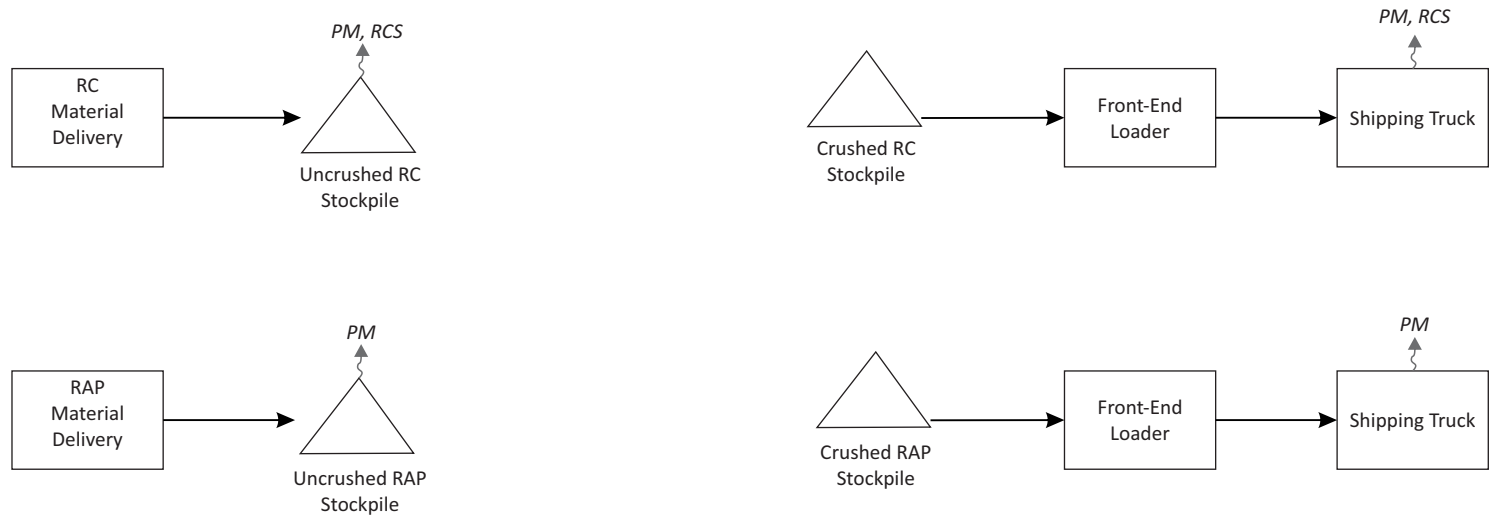
Appendix B


Figures and Zoning Map



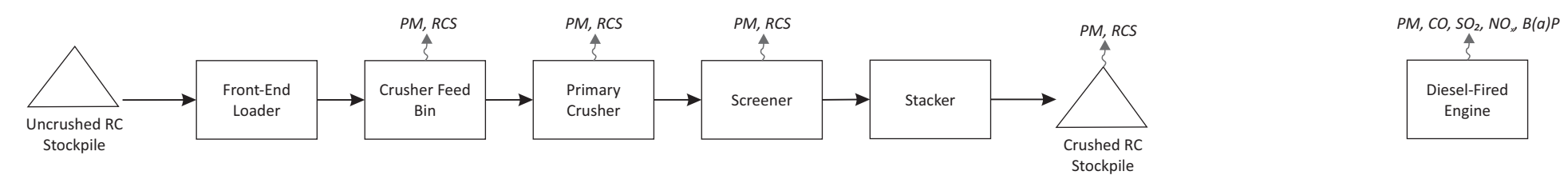


LEGEND			PROCESS FLOW DIAGRAM - HMA		File No.: 1350-01.01
PM	Particulate Matter	Material Flow →	Ottawa D-Squared Construction Limited 5455 Boundary Road, Navan, Ontario, K4B 1P6		Dwg: 1350-01.01_1A
RCS	Respirable Crystalline Silica (PM ₁₀) (Quartz)				Date: April 2020
PAH	Polycyclic Aromatic Hydrocarbons	Emissions Flow - - - - - →	 Environmental Compliance Approval (Air & Noise) with Limited Operational Flexibility		Drawn By: MK
VOC	Volatile Organic Compounds	Emissions Release ↗			FIGURE 1A
Metals	Arsenic, Nickel, Lead				
NOx	Nitrogen Oxides				
SO ₂	Sulphur Dioxide				
CO	Carbon Monoxide				
RAP	Reclaimed Asphalt Pavement				

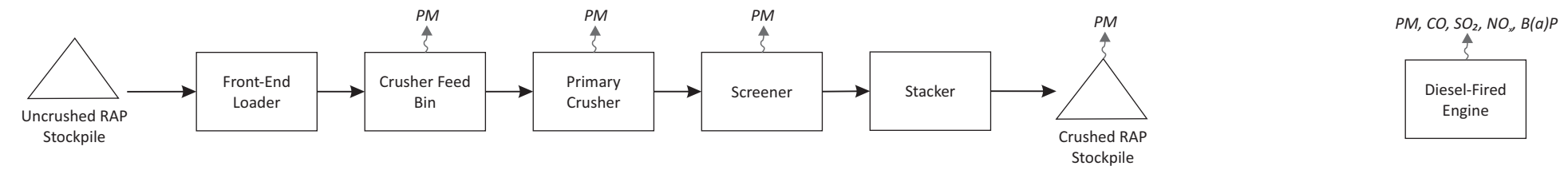



LEGEND			PROCESS FLOW DIAGRAM - DEPOT		File No.: 1350-01.01
PM	Particulate Matter	<div>Material Flow</div> <div>→</div> <div>Emissions Release</div> <div>⤿</div>	Ottawa D-Squared Construction Limited 5455 Boundary Road, Navan, Ontario, K4B 1P6		Dwg: 1350-01.01_1B
RCS	Respirable Crystalline Silica (PM ₁₀) (Quartz)				Date: April 2020
RC	Recycled Concrete			Environmental Compliance Approval (Air & Noise) with Limited Operational Flexibility	Drawn By: MK
RAP	Reclaimed Asphalt Pavement				FIGURE 1B

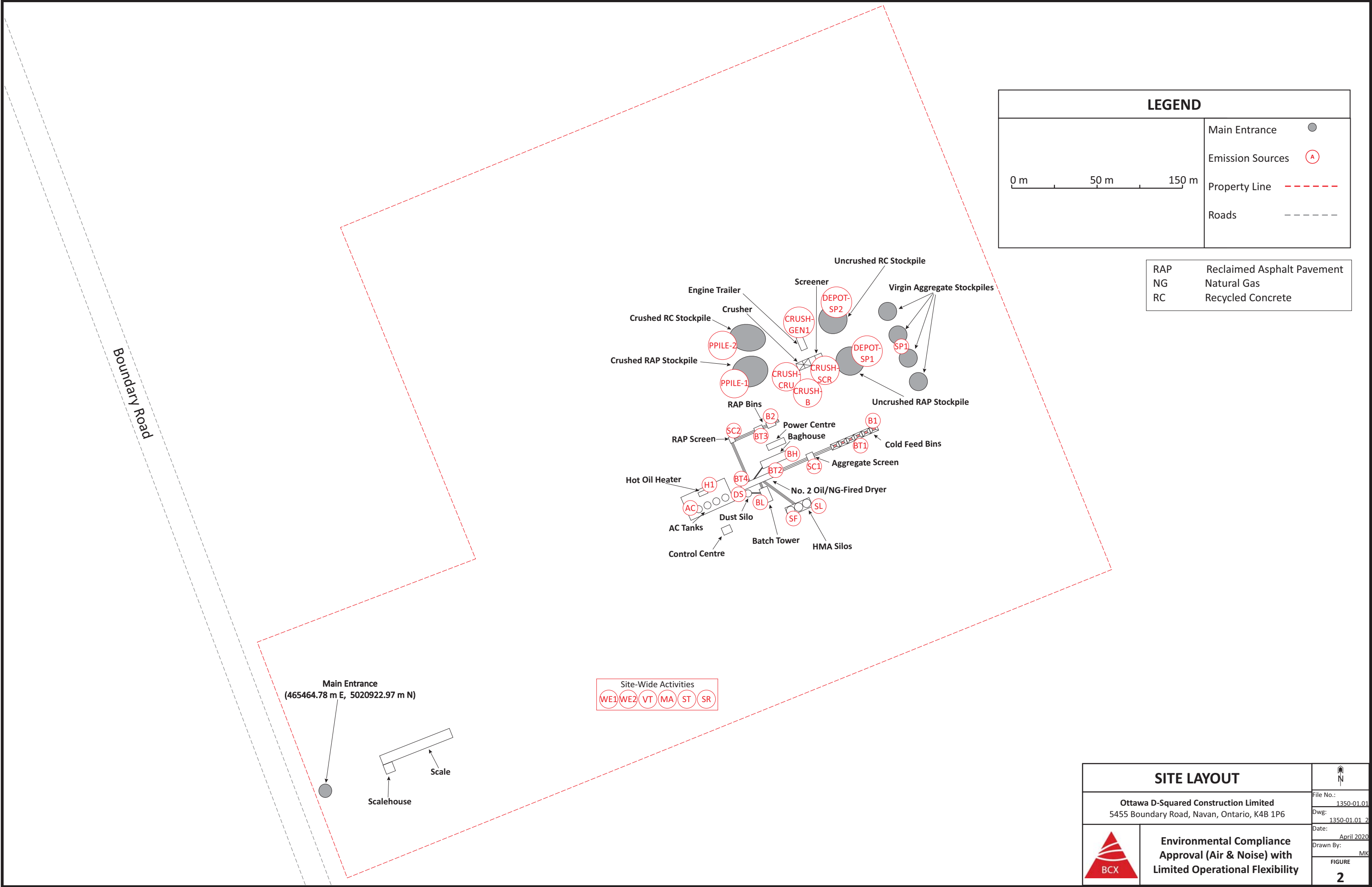
When crushing recycled concrete



When crushing reclaimed asphalt pavement

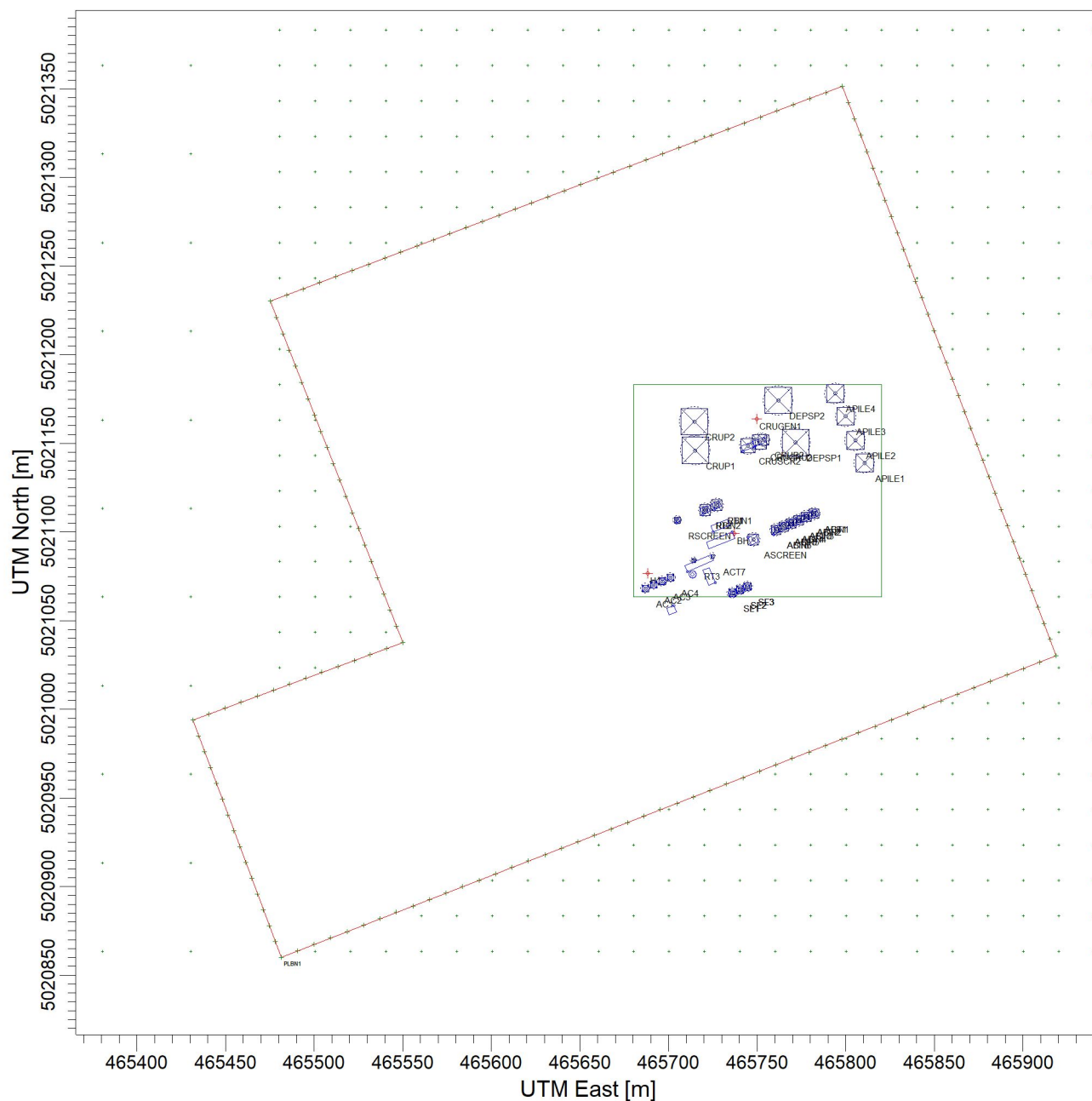




LEGEND			PROCESS FLOW DIAGRAM - CRUSHING		File No.: 1350-01.01
PM	Particulate Matter	Material Flow →	Ottawa D-Squared Construction Limited 5455 Boundary Road, Navan, Ontario, K4B 1P6		Dwg: 1350-01.01_1C
RCS	Respirable Crystalline Silica (PM ₁₀) (Quartz)				Date: April 2020
RC	Recycled Concrete	Emissions Release ↗		Environmental Compliance Approval (Air & Noise) with Limited Operational Flexibility	Drawn By: MK
RAP	Reclaimed Asphalt Pavement				FIGURE
CO	Carbon Monoxide				1C
SO ₂	Sulphur Dioxide				
NO _x	Nitrogen Oxides				
B(a)P	Benzo(a)pyrene				



PROJECT TITLE:

Figure 3 Air Dispersion Modelling Configuration



<div>COMMENTS:</div> <div>Ottawa D-Squared Construction Limited</div> <div>5455 Boundary Road, Navan, Ontario, K4B 1P6</div>	<div>SOURCES:</div> <div>44</div>	<div>COMPANY NAME:</div> <div>BCX Environmental Consulting</div>	
	<div>RECEPTORS:</div> <div>1693</div>		
	<div>OUTPUT TYPE:</div> <div>Concentration</div>	<div>SCALE:</div> <div>1:3,634</div> <div>0  0.1 km</div>	
		<div>DATE:</div> <div>28-Apr-2020</div>	<div>PROJECT NO.:</div> <div>1350-01.01</div>

I want to ...

Enter address, street, intersection or place



Help Français

Base Maps

2017

More layers...

Save Load

AG - Agricultural Zone (Sections 211 and 212)
 ME - Mineral Extraction Zone (Sections 213 and 214)
 MR - Mineral Aggregate Reserve Zone (Sections 215 and 216)
 RC - Rural Commercial Zone (Sections 217 and 218)
 RG - Rural General Industrial Zone (Sections 219 and 220)
 RH - Rural Heavy Industrial Zone (Sections 221 and 222)
 RI - Rural Institutional Zone (Sections 223 and 224)
 RR - Rural Residential Zone (Sections 225 and 226)
 RU - Rural Countryside Zone (Sections 227 and 228)
 VM - Village Mixed-Use Zone (Sections 229 and 230)
 V1 - Village Residential First Density Zone (Sections 231 and 232)
 V2 - Village Residential Second Density Zone (Sections 233 and 234)
 V3 - Village Residential Third Density Zone (Sections 235 and 236)

RH[860] HT[8]H



Zoning

To view zoning information, click on the zoning polygon for further details.

- Flood Plain Overlay (Section 58)**
 - Flood Plain (Section 58)
 - Flood Plain - Area-Specific Provisions (Section 58(4))
- Heritage Overlay (Sec. 60)**
 - Heritage (Section 60)
- Village Residential - Enterprise Overlay**
 - Village Residential Enterprise (Section 128A)
- Zoning By-law 2008-250 Consolidation**
 - Zoning Boundary
- Mature Neighbourhoods Overlay - Outline**
 - Mature Neighbourhoods Overlay
- By-Law 2017-295**
 - Relief Overlay
- Water**
 - Water
- Mature Neighbourhoods Overlay**
 - Mature Neighbourhoods Overlay

Ottawa D-Squared Construction Limited - Ottawa Facility
 Main Entrance: (465464.78 m E, 5020922.97 m N)

300 m
 1000 ft

387246.0 5023035.3

Appendix C
Emission Calculations



D Squared Construction Ltd. Emission Inventory and Dispersion Modelling Report

Input Data

HMA Mix Temperature	347 °F	
Average AC Surface Temperature	Breathing Loss 306.0 °F	Working Loss 347.0 °F
AC Minimum Tank Temperature	265.0 °F	347.0 °F
AC Maximum Tank Temperature	347.0 °F	347.0 °F
Bulk AC Tank Temperature	305.0 °F	347.0 °F
Asphalt Volatility (V) - Annual	0.50	
Asphalt Volatility (V) - Daily	1.00	
Asphalt Volatility (V) - Hourly	1.00	
Percentage of coarse aggregate in HMA	40.0 %	
Percentage of sand in HMA	40.0 %	
Percentage of RAP in HMA	15.0 %	
Percentage of Asphalt Cement in HMA	4.5 %	

HMA Plant Operations

Annual Production

Maximum annual production rate of the HMA Plant	200,000 tonnes/yr
Percentage Stored in Silos	100 %
HMA Stored in/Loadout from Silos	200,000 tonnes/yr

Daily Production

Maximum daily production rate of the HMA Plant	3,000 tonnes/day
Percentage Stored in Silos	100 %
HMA Stored in/Loadout from Silos	3,000 tonnes/day

Hourly Production

Maximum hourly production rate of the HMA Plant	272 tonnes/hour
Percentage Stored in Silos	100 %
HMA Stored in Silos	272 tonnes/hour

Aggregate Depot

Daily Production

Maximum daily delivery/shipment rate of aggregate depot	1,000 tonnes/day
Aggregate Depot Operating Schedule	24 hours/day

Crusher Operations

Daily Production

Maximum daily processing rate of the crusher	2,000 tonnes/day
Diesel Engine Operating Schedule	12 hours/day

Calculation Sheet 1
Drop Emission Rates

Emission factors from dropping aggregate materials were calculated using the US EPA AP-42 Drop Equation $EF = k (0.016) (U/2.2)^{1.3} / (M/2)^{1.4}$ (kg/tonne) (U.S. EPA, AP-42, Section 13.2.4 *Aggregate Handling and Storage Pile*, November 2006, Equation 1), where $k = 0.8$ prorated for particulate matter and $k = 0.35$ for PM_{10} . U is wind speed (m/s) and M is the moisture content of the aggregate material (%). These emissions have been estimated for each AERMOD wind category using the maximum wind speed for each category. For Category F, the maximum hourly wind speed for the regional meteorological surface data file was used.

A maximum concentration of respirable crystalline silica (quartz) in PM_{10} of 10.44% was conservatively assumed for drops or transfers of aggregate materials as it is double the conservative estimate (5.22%) given in *Screening Assessment for the Challenge, Quartz, Crystobalite, Environment Canada/Health Canada, June 2013*.

Maximum Controlled Daily PM Emissions (g/s) = PM Emission Factor (kg/tonne) x Loading Rate (tonnes/day) x (1-Control Efficiency, %) x 1000g/kg x day/24hr x 1hr/3600s
Maximum Controlled Daily RCS Emissions (g/s) = RCS Emission Factor (kg/tonne) x Loading Rate (tonnes/day) x (1-Control Efficiency, %) x Percent of Crystalline Silica in PM_{10} x 1000g/kg x day/24hr x 1hr/3600s

Maximum daily production rate of the HMA Plant3,000tonnes/day

Maximum daily delivery/shipment rate of aggregate depot1,000tonnes/day

Maximum daily processing rate of the crusher2,000tonnes/day

Moisture Content

Mositure Content of Coarse Aggregate	4.8	%
Mositure Content of Sand	4.8	%
Mositure Content of RAP	4.0	%
Mositure Content of Uncrushed RAP	4.0	%
Mositure Content of Crushed RAP	4.0	%
Mositure Content of Uncrushed RC	1.0	%
Mositure Content of Crushed RC	1.0	%

Percentage of Material in HMA

Percentage of Coarse Aggregate	in HMA	40.0	%
Percentage of Sand	in HMA	40.0	%
Percentage of RAP	in HMA	15.0	%
Percentage of Asphalt Cement	in HMA	4.5	%

	A	B	C	D	E	F
Maximum Wind Speed for Category (m/s)	1.54	3.09	5.14	8.23	10.8	18
Factor for Variable Emissions	0.04	0.10	0.20	0.36	0.51	1.00

Particulate Matter (PM) Emission Rates												
Source I.D.	Source Description	Material	Contaminants	CAS #	Averaging Period	Maximum Loading Rate (tonne/day)	Additional Control Efficiency (%)	Emission Factor (kg/tonne)	Controlled Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
Hot Mix Asphalt Plant												
SP1A	Delivery truck(s) material drop to stockpiles	Coarse Aggregate	PM	PM	24 hr	1200	0%	0.0058	8.02E-02	A	Above Average	EF
SP1B	Delivery truck(s) material drop to stockpiles	Sand	PM	PM	24 hr	1200	0%	0.0058	8.02E-02	A	Above Average	EF
B1A	Front-end loader material drop to cold feed bins	Coarse Aggregate	PM	PM	24 hr	1200	0%	0.0058	8.02E-02	A	Above Average	EF
B1B	Front-end loader material drop to cold feed bins	Sand	PM	PM	24 hr	1200	0%	0.0058	8.02E-02	A	Above Average	EF
B2	Front-end loader material drop to RAP bins	RAP	PM	PM	24 hr	450	0%	0.0075	3.88E-02	A	Above Average	EF
Aggregate Depot												
DEPOT-SP1	Delivery truck(s) to stockpiles	Uncrushed RAP	PM	PM	24 hr	1000	0%	0.0075	8.63E-02	A	Above Average	EF
PPILE-1A	Material drop from product stockpile to shipping truck(s)	Crushed RAP	PM	PM	24 hr	1000	0%	0.0075	8.63E-02	A	Above Average	EF
DEPOT-SP2	Delivery truck(s) to stockpiles	Uncrushed RC	PM	PM	24 hr	1000	0%	0.0519	6.01E-01	A	Above Average	EF
PPILE-2A	Material drop from product stockpile to shipping truck(s)	Crushed RC	PM	PM	24 hr	1000	0%	0.0519	6.01E-01	A	Above Average	EF
Crusher Operations												
CRUSH-B2	Material drop into primary crusher feed bin	Uncrushed RC	PM	PM	24 hr	2000	0%	0.0519	1.20E+00	A	Above Average	EF
PPILE-2B	Material drop from stacker to product stockpile	Crushed RC	PM	PM	24 hr	2000	0%	0.0519	1.20E+00	A	Above Average	EF
Total PM emissions from drop points:									4.14E+00			

Respirable Crystalline Silica (quartz) (PM ₁₀)												
Source I.D.	Source Description	Material	Contaminants	CAS #	Averaging Period	% of Crystalline Silica (quartz) in PM ₁₀	Emission Factor (kg/tonne)	Controlled Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique	
Aggregate Depot												
DEPOT-SP2	Delivery truck(s) to stockpiles	Uncrushed RC	RCS	14808-60-7	24 hr	10.44%	0.0075	2.74E-02	A	Above Average	EF	
PPILE-2A	Material drop from product stockpile to shipping truck(s)	Crushed RC	RCS	14808-60-7	24 hr	10.44%	0.0519	2.74E-02	A	Above Average	EF	
Crusher Operations												
CRUSH-B2	Material drop into primary crusher feed bin	Uncrushed RC	RCS	14808-60-7	24 hr	10.44%	0.0519	5.49E-02	A	Above Average	EF	
PPILE-2B	Material drop from stacker to product stockpile	Crushed RC	RCS	14808-60-7	24 hr	10.44%	0.0519	5.49E-02	A	Above Average	EF	
Total RCS emissions from drop points:								1.65E-01				

Calculation Sheet 2
Emission Rates - Conveyor Transfers

Emissions from conveyor transfers were calculated using emission factors in US EPA AP-42, Section 11.19.1, Sand and Gravel Processing (August 2004). The material is washed or maintains a high moisture content with a low silt content; as a result the emission factor for PM: 0.00007 kg/t (controlled conveyor transfer), U.S. EPA AP-42, Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing," August 2004 was used.

Maximum Daily Controlled PM Emissions (g/s) = PM Emission Factor (kg/tonne) x Loading Rate (tonnes/day) x (1-Control Efficiency, %) x (1000g/kg) x (1day/24hr) x (1hr/3600s)

Maximum daily production rate of the HMA Plant

3,000tonnes/day

Maximum daily processing rate of the crusher

RAP

2,000tonnes/day

Percentage of Coarse Aggregate in HMA		40.0	%
Percentage of Sand in HMA		40.0	%
Percentage of RAP in HMA		15.0	%
Percentage of Asphalt Cement in HMA		4.5	%

Particulate Matter (PM) Emission Rates												
Source I.D.	Source Description	Material	Contaminants	CAS #	Averaging Period	Maximum Loading Rate (tonne/day)	Additional Control Efficiency (%)	Emission Factor (kg/tonne)	Controlled Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
Hot Mix Asphalt Plant												
BT1A	Material transfer from cold feed bins to conveyor [C1]	Coarse Aggregate	PM	PM	24 hr	1200	0%	0.00007	9.72E-04	E	Marginal	EF
BT1B	Material transfer from cold feed bins to conveyor [C1]	Sand	PM	PM	24 hr	1200	0%	0.00007	9.72E-04	E	Marginal	EF
BT2A	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Coarse Aggregate	PM	PM	24 hr	1200	0%	0.00007	9.72E-04	E	Marginal	EF
BT2B	Material transfer from inclined conveyor [C2] to rotary drum dryer/mixer	Sand	PM	PM	24 hr	1200	0%	0.00007	9.72E-04	E	Marginal	EF
BT3	Material transfer from RAP bins to conveyor [C3]	RAP	PM	PM	24 hr	450	0%	0.00007	3.65E-04	E	Marginal	EF
BT4	Material transfer from inclined conveyor [C4] to mixer	RAP	PM	PM	24 hr	450	0%	0.00007	3.65E-04	E	Marginal	EF
Total PM emissions from transfer points:									4.62E-03			

Calculation Sheet 3
Emission Rates - Crushing and Screening

Emissions from crushing and screening were calculated using emission factors in US EPA AP-42, Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing, August 2004. Emission factors for PM are 0.0011 kg/t for controlled screening, 0.0125 kg/t for uncontrolled screening, and 0.0027 kg/t uncontrolled crushing. Emission factors for PM₁₀ are 0.0043 kg/t for uncontrolled screening and 0.0012 kg/t uncontrolled crushing.

Screening emissions from the HMA Plant are treated as controlled since the material is either received washed and/or is moist/sticky.

A maximum concentration of respirable crystalline silica (quartz) in PM10 of 25.5% was conservatively assumed for crushing and screening (Wisconsin Department of Natural Resources, 2011).

Maximum Daily Controlled PM Emissions (g/s) = PM Emission Factor (kg/tonne) x Loading Rate (tonnes/day) x (1-Control Efficiency, %) x 1000g/kg x (1day/24hr) x (1hr/3600s)

Maximum Daily Controlled RCS Emissions (g/s) = RCS Emission Factor (kg/tonne) x Loading Rate (tonnes/day) x (1-Control Efficiency, %) x Percent of Crystalline Silica in PM10 x (1000g/kg) x (1day/24hr) x (1hr/3600s)

Maximum daily production rate of the HMA Plant

3,000

tonnes/day

Maximum daily processing rate of the crusher

RC

2,000

tonnes/day

Percentage of Material in HMA			
Percentage of Coarse Aggregate	in HMA	40.0	%
Percentage of Sand	in HMA	40.0	%
Percentage of RAP	in HMA	15.0	%
Percentage of Asphalt Cement	in HMA	4.5	%

Particulate Matter (PM) Emission Rates												
Source I.D.	Source Description	Material	Contaminants	CAS #	Averaging Period	Maximum Loading Rate (tonne/day)	Additional Control Efficiency (%)	Emission Factor (kg/tonne)	Controlled Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
Hot Mix Asphalt Plant												
SC1A	Screening	Coarse Aggregate	PM	PM	24 hr	1200	0%	0.0011	1.53E-02	E	Marginal	EF
SC1B	Screening	Sand	PM	PM	24 hr	1200	0%	0.0011	1.53E-02	E	Marginal	EF
SC2	Screening	RAP	PM	PM	24 hr	450	0%	0.0011	5.73E-03	E	Marginal	EF
Crusher Operations												
CRUSH-CRU2	Primary Crushing	Uncrushed RC	PM	PM	24 hr	2000	0%	0.0027	6.25E-02	E	Marginal	EF
CRUSH-SCR2	Primary Screening	Crushed RC	PM	PM	24 hr	2000	0%	0.0125	2.89E-01	E	Marginal	EF
Total PM emissions from crushing & screening operations:									3.88E-01			

Respirable Crystalline Silica (quartz) (PM ₁₀) Emission Rates											
Source I.D.	Source Description	Material	Contaminants	CAS #	Averaging Period	% of Crystalline Silica (quartz) in PM ₁₀	Emission Factor (kg/tonne)	Controlled Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
Crusher Operations											
CRUSH-CRU2	Primary Crushing	Uncrushed RC	RCS	14808-60-7	24 hr	25.5%	0.0012	7.08E-03	D	Marginal	EF
CRUSH-SCR2	Primary Screening	Crushed RC	RCS	14808-60-7	24 hr	25.5%	0.0043	2.54E-02	D	Marginal	EF
				Total RCS emissions from crushing & screening operations:				3.25E-02			

Calculation Sheet 4
Emission Rates - Worst Case Dryer (HMA Baghouse)

Emission factors taken from U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Table 11.1-1, 11.1-3, 11.1-5, 11.1-7, 11.1-10, 11.1-11 and 11.1-12 for a worst case HMA plant using a fabric filter baghouse and a No. 2 Oil-fired burner. To convert from metric tonne to short ton, divide by 0.9072.

Data quality of the emission estimates determined as per Ministry Guideline A-10, Section 9.2 Data Quality.

Maximum Annual Emission Rate (g/s) = Maximum Production Rate (tonne/year) x Emission Factor (lb/ton) x 0.5 (kg/tonne)/(lb/ton) x (1000g/kg) x (yr/365days) x (day/24 hr) x (hr/3600s)

Maximum Daily Emission Rate (g/s) = Maximum Production Rate (tonne/day) x Emission Factor (lb/ton) x 0.5 (kg/tonne)/(lb/ton) x (1000g/kg) x (day/24 hr) x (hr/3600s)

Maximum Hourly Emission Rate (g/s) = Maximum Production Rate (tonne/hr) x Emission Factor (lb/ton) x 0.5 (kg/tonne)/(lb/ton) x (1000g/kg) x (hr/3600s)

Maximum HMA Production Rate - Annual

Maximum HMA Production Rate - 24 hr

Maximum HMA Production Rate - 1 hr

200,000	tonnes/year
3,000	tonnes/day
272	tonnes/hour

Source I.D.	Source Description	Contaminant	CAS#	Averaging Period	Emission Factor (lb/ton)	Controlled Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	PM	PM	24 hr	4.20E-02	7.29E-01	B	Above Average	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	NO _x	10102-44-0	24 hr	1.20E-01	2.08E+00	E	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	NO _x	10102-44-0	1 hr	1.20E-01	4.53E+00	E	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	SO ₂	7446-09-5	24 hr	8.80E-02	1.53E+00	E	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	SO ₂	7446-09-5	1 hr	8.80E-02	3.32E+00	E	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	CO	630-08-0	1 hr	4.00E-01	1.51E+01	C	Average	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	B(a)P	50-32-8	Annual	9.80E-09	3.11E-08	E	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	B(a)P	50-32-8	24 hr	9.80E-09	1.70E-07	E	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Benzene	71-43-2	Annual	3.90E-04	1.24E-03	A	Above Average	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Benzene	71-43-2	24 hr	3.90E-04	6.77E-03	A	Above Average	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Naphthalene	91-20-3	24 hr	6.50E-04	1.13E-02	D	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Arsenic	7440-38-2	24 hr	5.60E-07	9.72E-06	D	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Lead	7439-92-1	24 hr	1.50E-05	2.60E-04	C	Average	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Nickel	7440-02-0	Annual	6.30E-05	2.00E-04	D	Marginal	EF
BH	Baghouse, servicing the HMA plant including the natural gas or no. 2 oil-fired dryer/mixer	Nickel	7440-02-0	24 hr	6.30E-05	1.09E-03	D	Marginal	EF

Calculation Sheet 5
Asphalt Cement Requirements, Tank Dimensions and Volumes

The daily asphalt cement delivery rate for each tank is calculated using the number of full, 40-tonne trucks which satisfies the asphalt cement required, assuming each tank contributes to the requirement equally.

The yearly asphalt cement delivery rate is then calculated by using the ratio of trucks accepted to each tank daily, multiplied by the number of tanker trucks required to fulfill the annual asphalt cement requirement.

Total HMA Produced

200,000 tonnes/yr

3,000 tonnes/day

Asphalt Cement in HMA

4.5 %

Total Asphalt Cement Required

9,000 tonne/yr

135 tonne/day

Number of 40-tonne Asphalt Cement Tanker Trucks Required

225 trucks/yr

4 trucks/day

Tank	Content	Type	Height / Length (m)	Diameter (m)	Volume (m ³)	Capacity (tonnes)	Working Volume (m ³)	Working Capacity (tonnes)	Volume %	Asphalt Cement Required	Maximum Number of Trucks Accepted in a Day	Asphalt Cement Delivery Rate	Maximum Number of Trucks Accepted in a Year	Asphalt Cement Delivery Rate
										tonnes/ day		tonnes/ day		tonnes/ year
AC1	Asphalt Cement	VFRT	13.26	3.34	116.2	119.3	104.6	107.4	25%	33.8	1	40.0	57	2,280.0
AC2	Asphalt Cement	VFRT	13.26	3.34	116.2	119.3	104.6	107.4	25%	33.8	1	40.0	57	2,280.0
AC3	Asphalt Cement	VFRT	13.26	3.34	116.2	119.3	104.6	107.4	25%	33.8	1	40.0	57	2,280.0
AC4	Asphalt Cement	VFRT	13.26	3.34	116.2	119.3	104.6	107.4	25%	33.8	1	40.0	57	2,280.0

Calculation Sheet 5 Continued
Asphalt Cement Storage Tank Fugitive Emissions - AC1, AC2, AC3, AC4

For each contaminant the applicable speciation profile percentage was applied to the appropriate emission factor (i.e. PAH emissions were calculated using the Organic PM emission factor) taken from U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Table 11.1-15 and Table 11.1-16. For benzo(a)pyrene, the speciation profile for load-out and yard emissions was conservatively assumed, since the speciation profile for silo filling and asphalt storage tank emissions were measured below detection limits. (U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Table 11.1-15).

The daily working loss for the entire contents of the tank was estimated using TANKS 4.0.9d, where the calculation was based on the daily amount of material stored in the tank and the maximum delivery temperature listed below. The daily breathing loss is equal to the annual breathing loss, divided by 365 days. The losses were then partitioned based on the mass fraction of the vapour phase of each component. Data quality of the emission estimates determined as per Ministry Guideline A-10, Section 9.2 Data Quality.

AC Delivery for Tank	40.00	tonnes/day	2,280.00	tonnes/year
AC Specific Gravity (SG)	1.027			
AC Stored (V _{air})	10,289.1	gal/day	586,477.4	gal/yr
Tank Type	Vertical Fixed Roof			
Is the tank heated?	Yes			
Shell Height	13.3	m	43.5	ft
Shell Diameter	3.3	m	11.0	ft
Maximum Liquid Height	11.9	m	39.2	ft
Average Liquid Height	6.0	m	19.6	ft
Working Volume	104,560.8	L	27,622.0	gal
	Working Loss		Breathing Loss	
Average Liquid Surface Temperature	347.0	°F	306.0	°F
Minimum Liquid Surface Temperature	347.0	°F	265.0	°F
Maximum Liquid Surface Temperature	347.0	°F	347.0	°F
Bulk Liquid Temperature	347.0	°F	305.0	°F
Average Liquid Vapour Pressure (VP _{avg})	0.03222	psi	0.01091	psi
Minimum Liquid Vapour Pressure (VP _{min})	0.03222	psi	0.00327	psi
Maximum Liquid Vapour Pressure (VP _{max})	0.03222	psi	0.03222	psi
Liquid Molecular Weight	1000	g/mol		
Vapour Molecular Weight	105	g/mol		
</				

Source I.D.	Source Description	Material	Contaminant		CAS #	Speciation Profile		Vapour Phase			Emission Rate (g/s)		ESDM Data Quality	Estimation Technique
								Mole Fraction	Molecular Weight (g/mol)	Weight Fraction	24 hr	Annual		
AC1-AC4	AC storage tank 1 - 4	Asphalt Cement	Asphalt Cement	Asphalt Cement	-	100	% of TOC	1.0	105.0	1.0	3.44E-03	6.91E-04	Average	EC
AC1-AC4	AC storage tank 1 - 4	Asphalt Cement		Benzene	71-43-2	0.032	% of TOC				1.10E-06	2.21E-07	Average	EC
AC1-AC4	AC storage tank 1 - 4	Asphalt Cement		Organic PM (total PM)	PM	2.083	% of TOC				7.16E-05	1.44E-05	Average	EC
AC1-AC4	AC storage tank 1 - 4	Asphalt Cement		B(a)P	50-32-8	0.0023	% of Organic PM				1.65E-09	3.31E-10	Average	EC
AC1-AC4	AC storage tank 1 - 4	Asphalt Cement		Naphthalene	91-20-3	1.82	% of Organic PM				1.30E-06	2.62E-07	Average	EC

Calculation Sheet 6
Emission Rates - Hot Oil Heater for AC tanks

The emission factors (EF) used were taken from U.S. EPA, AP-42, Section 1.3 "Fuel Oil Combustion," May 2010, Table 1.3-1.

It was conservatively assumed that the heater operates 24 hours per day. Data quality of the emission estimates determined as per Ministry Guideline A-10, Section 9.2 Data Quality.

$$\text{Emissions (g/s)} = \text{Emission Factor (lb/1000 gal)} \times \text{Fuel Consumption (MMBTU/hr)} \times (1000\text{gal}/140\text{MMBTU}) \times (\text{kg}/2.2\text{lb}) \times (1000\text{g}/\text{kg}) \times (1\text{hr}/3600\text{s})$$

Source I.D.	Source Description	Contaminants	CAS #	Averaging Period	Fuel Consumption		Emission Factors		Emission Rate (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
					Value	Units	Value	Units				
Hot Mix Asphalt Plant												
H1	Natural gas or no. 2 oil-fired hot-oil heater, servicing the AC storage tanks	NO _x	10102-44-0	24 hr	3.08	MMBTU/hr	20	lb/1000gal	5.56E-02	A	Above Average	EF
		NO _x	10102-44-0	1 hr			20	lb/1000gal	5.56E-02	A	Above Average	EF
		SO ₂	7446-09-5	24 hr			14.2	lb/1000gal	3.94E-02	A	Above Average	EF
		SO ₂	7446-09-5	1 hr			14.2	lb/1000gal	3.94E-02	A	Above Average	EF
		CO	630-08-0	1 hr			5	lb/1000gal	1.39E-02	A	Above Average	EF
		PM	PM	24 hr			3.3	lb/1000gal	9.17E-03	A+D	Marginal	EF

Calculation Sheet 7
Emission Rates - Engines

Emission factors for PM, NO_x, SO₂, CO, and BaP were taken from U.S. EPA, AP-42 Section 3.4, Table 3.4-4 for engines over 600 HP. The diesel fuel sulphur content was assumed to be 0.1% as per Sulphur in Diesel Fuel Regulations (SOR/2002-254), Environment Canada.

A maximum power rating of 1000 kW was conservatively assumed for the engine powering the crushing plant.

The total heat input is calculated using an engine efficiency of 36.2%, which is calculated using the fuel input and power output emission factors listed in the U.S. EPA AP-42 Section 3.3.

It was conservatively assumed that the engine operates 12 hours per day and 12 months per year for the maximum emission scenario.

Engine Efficiency (%) = Power Output (lb/hp-hr) / Fuel Input (lb/MMBTU) x (1 MMBTU / 393.0148 hp-hr)
Annual Emissions (g/s) = Fuel Input Emission Factor (lb/MMBTU) x Heat Input (MMBTU/hr) x (g/0.0022 lb) x (1 hr/3600 s) x (operating hours per day/24 hours per day) x (operating months per year/12 months per year)
Daily Emissions (g/s) = Emission Factor (lb/hp-hr) x Power Rate (kW) x (1hp/0.746kW) x (g/0.0022 lb) x (1hr/3600s) x (operating hours per day/24 hours per day)
Daily Emissions (g/s) = Fuel Input Emission Factor (lb/MMBTU) x Heat Input (MMBTU/hr) x (g/0.0022 lb) x (1 hr/3600 s) x (operating hours per day/24 hours per day)
Hourly Emissions (g/s) = Emission Factor (lb/hp-hr) x Power Rate (kW) x (1hp/0.746kW) x (g/0.0022 lb) x (1hr/3600s)

Source I.D.	Source Description	Contaminant	CAS #	Averaging Period	Power Rate		Heat Input		Emission Factors		Emissions (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
					Value	Units	Value	Units	Value	Units				
Crusher Operations														
CRUSH-GEN1	Diesel-fired engine for the crushing plant	PM	PM	24 hr	1000.0	kW	3.41	MMBTU/hr	7.00E-04	lb/hp-hr	5.93E-02	B	Above Average	EF
		NO _x	10102-44-0	24 hr					2.40E-02	lb/hp-hr	2.03E+00	B	Above Average	EF
		NO _x	10102-44-0	1 hr					2.40E-02	lb/hp-hr	4.06E+00	B	Above Average	EF
		SO ₂	7446-09-5	24 hr					8.09E-04	lb/hp-hr	6.85E-02	D	Marginal	EF
		SO ₂	7446-09-5	1 hr					8.09E-04	lb/hp-hr	1.37E-01	D	Marginal	EF
		CO	630-08-0	1 hr					5.50E-03	lb/hp-hr	9.31E-01	C	Average	EF
		B(a)P	50-32-8	Annual					2.57E-07	lb/MMBTU	5.54E-08	E	Marginal	EF
		B(a)P	50-32-8	24 hr					2.57E-07	lb/MMBTU	5.54E-08	E	Marginal	EF

Calculation Sheet 8
Emission Rates - Silo Filling

Emission calculations are based on compounds emission factors and contaminant speciation profile percentage taken from U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Tables 11.1-15 and 11.1-16 and Table 11.1-14, respectively.

For each contaminant the applicable speciation profile percentage was applied to the appropriate emission factor (i.e. PAH emissions were calculated using the Organic PM emission factor) taken from U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Tables 11.1-15 and 11.1-16.

The % of Organic PM for Benzo(a)pyrene is listed as non-detect in U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Table 11.1-15. Since the Benzo(a)pyrene emissions come from the asphalt cement in HMA production and since the HMA temperature is the same for silo filling as it is for loadout, it was conservatively assumed that the % of Benzo(a)pyrene in Organic PM would be the same for silo filling as it is for HMA loadout.

Data quality of the emission estimates determined as per Ministry Guideline A-10, Section 9.2 Data Quality.

Emission Factor (lb/ton) (Total PM) = 0.000332 + 0.00105 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Emission Factor (lb/ton) (Total Organic Carbon) = 0.0504 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Emission Factor (lb/ton) (Organic PM) = 0.00105 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Emission Factor (lb/ton) (Carbon Monoxide) = 0.00488 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Maximum Annual Emission Rate (g/s) (PM, TOC, Organic PM, CO) = Maximum Production Rate (tonne/year) x Emission Factor (kg/tonne) x (1000g/kg) x (yr/365days) x (day/24hr) x (hr/3600s)
Maximum Daily Emission Rate (g/s) (PM, TOC, Organic PM, CO) = Maximum Production Rate (tonne/day) x Emission Factor (kg/tonne) x (day/24hr) x (hr/3600s)
Maximum Hourly Emission Rate (g/s) (PM, TOC, Organic PM, CO) = Maximum Production Rate (tonne/hr) x Emission Factor (kg/tonne) x (hr/3600s)
Maximum Emission Rate (g/s) (PAH, VOC) = Organic Based Compound Emission Rate (g/s) x (% of Organic-Based Compound)/100

HMA Mix Temperature		347	°F
Asphalt Volatility (V)	- Annual	0.5	
Asphalt Volatility (V)	- 24 hr	1.0	
Asphalt Volatility (V)	- 1 hr	1.0	
Maximum Silo Filling Rate	- Annual	200,000	tonnes/year
Maximum Silo Filling Rate	- 24 hr	3,000	tonnes/day
Maximum Silo Filling Rate	- 1 hr	272	tonnes/hour

Source I.D.	Source Description	Material	Contaminant	CAS #	Averaging Period	Emission Factor		Emission Rate	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
						lb/ton	kg/tonne	(g/s)			
SF	HMA Silo Filling	HMA	PM	PM	24 hr	1.21E-03	6.07E-04	2.11E-02	C	Average	EF
SF	HMA Silo Filling	HMA	Total Organic Carbon	-	Annual	2.12E-02	1.06E-02	6.71E-02	C	Average	EF
SF	HMA Silo Filling	HMA	Total Organic Carbon	-	24 hr	4.23E-02	2.12E-02	7.35E-01	C	Average	EF
SF	HMA Silo Filling	HMA	Organic PM	-	Annual	4.41E-04	2.21E-04	1.40E-03	C	Average	EF
SF	HMA Silo Filling	HMA	Organic PM	-	24 hr	8.82E-04	4.41E-04	1.53E-02	C	Average	EF
SF	HMA Silo Filling	HMA	Organic PM	-	1 hr	8.82E-04	4.41E-04	3.33E-02	C	Average	EF
SF	HMA Silo Filling	HMA	CO	630-08-0	1 hr	4.10E-03	2.05E-03	1.55E-01	C	Average	EF
Source I.D.	Source Description	Material	Contaminant	CAS #	Averaging Period	Emission Factor (% of Organic-Based Compound)		Emission Rate (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
Organic Volatile-Based Compounds											
SF	HMA Silo Filling	HMA	Benzene	71-43-2	Annual	% of TOC	3.20E-02	2.15E-05	C	Average	EF
SF	HMA Silo Filling	HMA	Benzene	71-43-2	24 hr	% of TOC	3.20E-02	2.35E-04	C	Average	EF
Organic Particulate-Based Compounds											
SF	HMA Silo Filling	HMA	B(a)P	50-32-8	Annual	% of Organic PM	2.30E-03	3.22E-08	C	Average	EF
SF	HMA Silo Filling	HMA	B(a)P	50-32-8	24 hr	% of Organic PM	2.30E-03	3.52E-07	C	Average	EF
SF	HMA Silo Filling	HMA	Naphthalene	91-20-3	24 hr	% of Organic PM	1.82E+00	2.79E-04	C	Average	EF

Calculation Sheet 9
Emission Rates - Silo Loadout

Emission calculations are based on compounds emission factors and contaminant speciation profile percentage taken from U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Tables 11.1-15 and 11.1-16 and Table 11.1-14, respectively.

For each contaminant the applicable speciation profile percentage was applied to the appropriate emission factor (i.e. PAH emissions were calculated using the Organic PM emission factor) taken from U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Tables 11.1-15 and 11.1-16.

The % of Organic PM for Benzo(a)pyrene is listed as non-detect in U.S. EPA, AP-42, Section 11.1, "Hot Mix Asphalt Plants," March 2004 Table 11.1-15. Since the Benzo(a)pyrene emissions come from the asphalt cement in HMA production and since the HMA temperature is the same for silo filling as it is for loadout, it was conservatively assumed that the % of Benzo(a)pyrene in Organic PM would be the same for silo filling as it is for HMA loadout.

Data quality of the emission estimates determined as per Ministry Guideline A-10, Section 9.2 Data Quality.

Emission Factor (lb/ton) (Total PM) = 0.000181 + 0.00141 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Emission Factor (lb/ton) (Total Organic Carbon) = 0.0172 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Emission Factor (lb/ton) (Organic PM) = 0.00141 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Emission Factor (lb/ton) (Carbon Monoxide) = 0.00558 x (-V) x exp[(0.0251) x (Temperature(°F) + 460) - 20.43]
Maximum Annual Emission Rate (g/s) (PM, TOC, Organic PM, CO) = Maximum Production Rate (tonne/year) x Emission Factor (kg/tonne) x (1000g/kg) x (yr/365days) x (day/24hr) x (hr/3600s)
Maximum Daily Emission Rate (g/s) (PM, TOC, Organic PM, CO) = Maximum Production Rate (tonne/day) x Emission Factor (kg/tonne) x (day/24hr) x (hr/3600s)
Maximum Hourly Emission Rate (g/s) (PM, TOC, Organic PM, CO) = Maximum Production Rate (tonne/hr) x Emission Factor (kg/tonne) x (hr/3600s)
Maximum Emission Rate (g/s) (PAH, VOC) = Organic Based Compound Emission Rate (g/s) x (% of Organic-Based Compound)/100

HMA Mix Temperature		347	°F
Asphalt Volatility (V)	- Annual	0.5	
Asphalt Volatility (V)	- 24 hr	1.0	
Asphalt Volatility (V)	- 1 hr	1.0	
Maximum Silo Loadout Rate	- Annual	200,000	tonnes/year
Maximum Silo Loadout Rate	- 24 hr	3,000	tonnes/day
Maximum Silo Loadout Rate	- 1 hr	272	tonnes/hour

Source I.D.	Source Description	Material	Contaminant	CAS #	Averaging Period	Emission Factor		Emission Rate	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
						lb/ton	kg/tonne	(g/s)			
SL	HMA truck loadout from HMA silos	HMA	PM	PM	24 hr	1.37E-03	6.83E-04	2.37E-02	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Total Organic Carbon	-	Annual	7.22E-03	3.61E-03	2.29E-02	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Total Organic Carbon	-	24 hr	1.44E-02	7.22E-03	2.51E-01	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Organic PM	-	Annual	5.92E-04	2.96E-04	1.88E-03	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Organic PM	-	24 hr	1.18E-03	5.92E-04	2.06E-02	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Organic PM	-	1 hr	1.18E-03	5.92E-04	4.47E-02	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	CO	630-08-0	1 hr	4.69E-03	2.34E-03	1.77E-01	C	Average	EF
Source I.D.	Source Description	Material	Contaminant	CAS #	Annual	Emission Factor (% of Organic-Based Compound)		Emission Rate (g/s)	U.S. EPA AP-42 Data Quality	ESDM Data Quality	Estimation Technique
Organic Volatile-Based Compounds											
SL	HMA truck loadout from HMA silos	HMA	Benzene	71-43-2	Annual	% of TOC	5.20E-02	1.19E-05	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Benzene	71-43-2	24 hr	% of TOC	5.20E-02	1.30E-04	C	Average	EF
Organic Particulate-Based Compounds											
SL	HMA truck loadout from HMA silos	HMA	B(a)P	50-32-8	Annual	% of Organic PM	2.30E-03	4.32E-08	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	B(a)P	50-32-8	24 hr	% of Organic PM	2.30E-03	4.73E-07	C	Average	EF
SL	HMA truck loadout from HMA silos	HMA	Naphthalene	91-20-3	24 hr	% of Organic PM	1.25E+00	2.57E-04	C	Average	EF

Appendix D

TANKS Files



TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	1350-01.01 D2 AC1-AC4 24hr
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	1350-01.01 D2 AC1-AC4 24hr

Tank Dimensions

Shell Height (ft):	43.50
Diameter (ft):	11.00
Liquid Height (ft) :	39.20
Avg. Liquid Height (ft):	19.60
Volume (gallons):	27,622.00
Turnovers:	0.37
Net Throughput(gal/yr):	10,289.10
Is Tank Heated (y/n):	Y

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	1.00
Radius (ft) (Dome Roof)	11.00

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

1350-01.01 D2 AC1-AC4 24hr - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
AC1-AC4 24hr	All	347.00	347.00	347.00	347.00	0.0322	0.0322	0.0322	105.0000			1,000.00	

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

1350-01.01 D2 AC1-AC4 24hr - Vertical Fixed Roof Tank

Annual Emission Calculations	
Standing Losses (lb):	0.0000
Vapor Space Volume (cu ft):	2,319.3331
Vapor Density (lb/cu ft):	0.0004
Vapor Space Expansion Factor:	0.0000
Vented Vapor Saturation Factor:	0.9600
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,319.3331
Tank Diameter (ft):	11.0000
Vapor Space Outage (ft):	24.4055
Tank Shell Height (ft):	43.5000
Average Liquid Height (ft):	19.6000
Roof Outage (ft):	0.5055
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5055
Dome Radius (ft):	11.0000
Shell Radius (ft):	5.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0004
Vapor Molecular Weight (lb/lb-mole):	105.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0322
Daily Avg. Liquid Surface Temp. (deg. R):	806.6700
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	806.6700
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0000
Daily Vapor Temperature Range (deg. R):	0.0000
Daily Vapor Pressure Range (psia):	0.0000
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0322
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0322
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0322
Daily Avg. Liquid Surface Temp. (deg R):	806.6700
Daily Min. Liquid Surface Temp. (deg R):	806.6700
Daily Max. Liquid Surface Temp. (deg R):	806.6700
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0322
Vapor Space Outage (ft):	24.4055
Working Losses (lb):	
Vapor Molecular Weight (lb/lb-mole):	105.0000

Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	0.0322
Annual Net Throughput (gal/yr.):	10,289.1000
Annual Turnovers:	0.3725
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	27,622.0000
Maximum Liquid Height (ft):	39.2000
Tank Diameter (ft):	11.0000
Working Loss Product Factor:	0.7500
 Total Losses (lb):	 0.6216

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

1350-01.01 D2 AC1-AC4 24hr - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
AC1-AC4 24hr	0.62	0.00	0.62

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	1350-01.01 D2 AC1-AC4 Annual
City:	
State:	
Company:	
Type of Tank:	Vertical Fixed Roof Tank
Description:	1350-01.01 D2 AC1-AC4 Annual

Tank Dimensions

Shell Height (ft):	43.50
Diameter (ft):	11.00
Liquid Height (ft) :	39.20
Avg. Liquid Height (ft):	19.60
Volume (gallons):	27,622.00
Turnovers:	21.23
Net Throughput(gal/yr):	586,477.40
Is Tank Heated (y/n):	Y

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft)	1.00
Radius (ft) (Dome Roof)	11.00

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meteorological Data used in Emissions Calculations: Buffalo, New York (Avg Atmospheric Pressure = 14.37 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

1350-01.01 D2 AC1-AC4 Annual - Vertical Fixed Roof Tank

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
AC1-AC4 Annual	All	306.00	265.00	347.00	305.00	0.0109	0.0033	0.0322	105.0000			1,000.00	

TANKS 4.0.9d

Emissions Report - Detail Format

Detail Calculations (AP-42)

1350-01.01 D2 AC1-AC4 Annual - Vertical Fixed Roof Tank

Annual Emission Calculations	
Standing Losses (lb):	12.6992
Vapor Space Volume (cu ft):	2,319.3331
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.1091
Vented Vapor Saturation Factor:	0.9861
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,319.3331
Tank Diameter (ft):	11.0000
Vapor Space Outage (ft):	24.4055
Tank Shell Height (ft):	43.5000
Average Liquid Height (ft):	19.6000
Roof Outage (ft):	0.5055
Roof Outage (Dome Roof)	
Roof Outage (ft):	0.5055
Dome Radius (ft):	11.0000
Shell Radius (ft):	5.5000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	105.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0109
Daily Avg. Liquid Surface Temp. (deg. R):	765.6700
Daily Average Ambient Temp. (deg. F):	47.6792
Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	764.6700
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,165.4120
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1091
Daily Vapor Temperature Range (deg. R):	82.0000
Daily Vapor Pressure Range (psia):	0.0290
Breather Vent Press. Setting Range (psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0109
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0033
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0322
Daily Avg. Liquid Surface Temp. (deg R):	765.6700
Daily Min. Liquid Surface Temp. (deg R):	724.6700
Daily Max. Liquid Surface Temp. (deg R):	806.6700
Daily Ambient Temp. Range (deg. R):	16.2750
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9861
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0109
Vapor Space Outage (ft):	24.4055
Working Losses (lb):	
Vapor Molecular Weight (lb/lb-mole):	11.9971
	105.0000

Vapor Pressure at Daily Average Liquid	
Surface Temperature (psia):	0.0109
Annual Net Throughput (gal/yr.):	586,477.4000
Annual Turnovers:	21.2323
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	27,622.0000
Maximum Liquid Height (ft):	39.2000
Tank Diameter (ft):	11.0000
Working Loss Product Factor:	0.7500
 Total Losses (lb):	 24.6963

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

1350-01.01 D2 AC1-AC4 Annual - Vertical Fixed Roof Tank

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
AC1-AC4 Annual	12.00	12.70	24.70

Appendix E
AERMOD Supporting Files

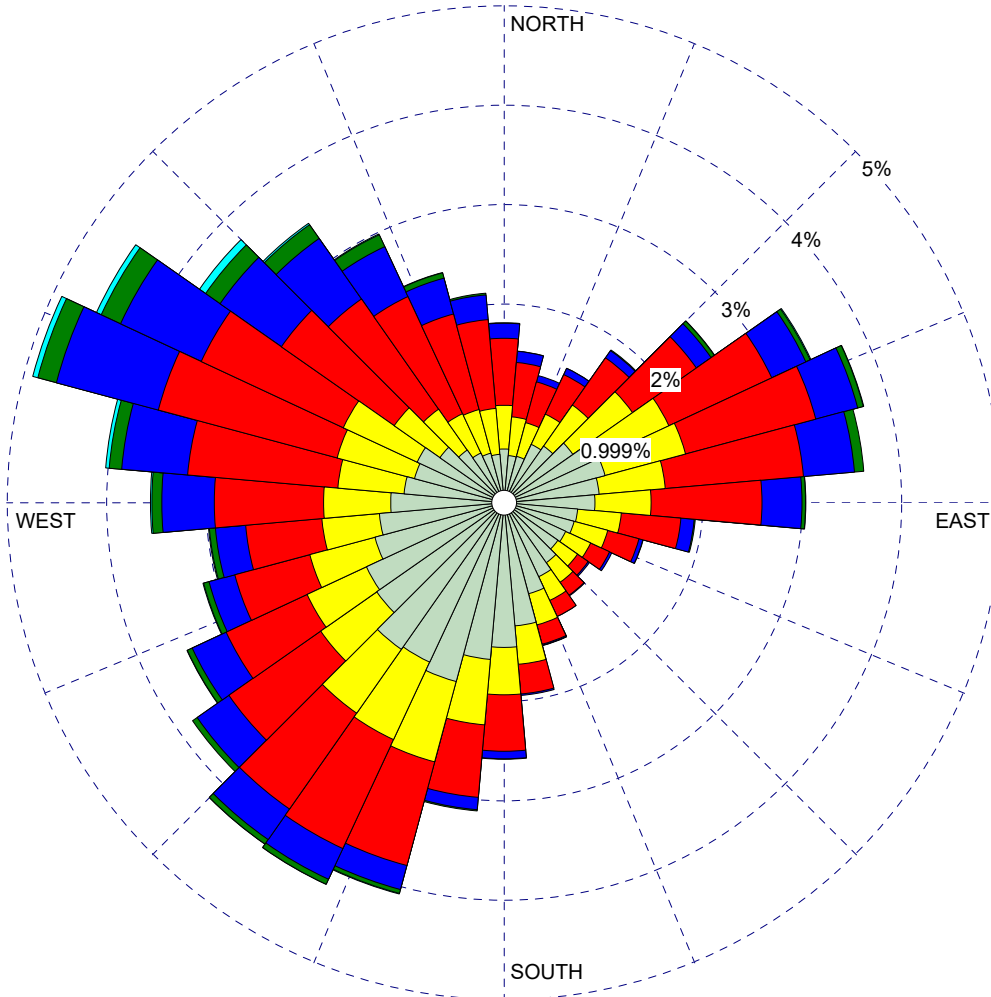


WIND ROSE PLOT:

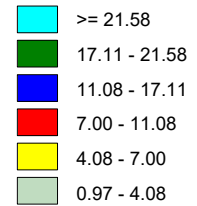
Windrose - Ottawa Dataset 1996 - 2000
Ministry Regional Meteorological Data

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(Knots)



Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 01-Jan-1996 - 00:00
End Date: 31-Dec-2000 - 23:59

COMPANY NAME:

BCX Environmental Consulting

CALM WINDS:

0.00%

TOTAL COUNT:

43390 hrs.

AVG. WIND SPEED:

6.29 Knots

DATE:

28-Apr-2020

PROJECT NO.:

1350-01.01



Appendix F

ESDM Report Checklist and Application Forms



Company Name

Ottawa D-Squared Construction Limited

Company Address

Unit Number	Street Number	Street Name	PO Box
	6811	Hiram Road	
City/Town	Province		Postal Code
Greely	Ontario		K4P 1A2

Location of Facility

5455 Boundary Road Navan, Ontario K4B 1P6

The attached Emission Summary and Dispersion Modeling Report was prepared in accordance with s. 26 of O. Reg. 419/05 and the guidance in the MCE document "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2009 and "Air Dispersion Modelling Guideline for Ontario" dated March 2009 and the minimum required information identified in the check-list on the reverse of this sheet has been submitted.

Company Contact
Company Contact

David Meikle

Company Contact Name

Last Name	First Name	Middle Initial
Meikle	David	

Title

Vice President of Business Development and Quarry Operations

Telephone Number

613 880-6204

Signature

Date (yyyy/mm/dd)

2020/03/30

Technical Contact
Technical Contact

Megan Ostronic, M.A.Sc., P.Eng.

Technical Contact Name

Last Name	First Name	Middle Initial
Ostronic	Megan	

Representing

BCX Environmental Consulting

Telephone Number

905 235-4218

Signature

Date (yyyy/mm/dd)

2020/03/31

Emission Summary and Dispersion Modelling Report Checklist			
	Required Information	Submitted	Explanation/Reference
	Executive Summary and Emission Summary Table		
	1.1 Overview of ESDM Report	<input checked="" type="checkbox"/> Yes	Executive Summary
	1.2 Emission Summary Table	<input checked="" type="checkbox"/> Yes	Table ES-1
1.0	Introduction and Facility Description		
	1.1 Purpose and Scope of ESDM Report (when report only represents a portion of facility)	<input checked="" type="checkbox"/> Yes	Section 1.0
	1.2 Description of Processes and NAICS code(s)	<input checked="" type="checkbox"/> Yes	Section 1.0, Section 1.4
	1.3 Description of Products and Raw Materials	<input checked="" type="checkbox"/> Yes	Section 1.2, Section 1.4
	1.4 Process Flow Diagram	<input checked="" type="checkbox"/> Yes	Figures 1A-1C (Appendix B)
	1.5 Operating Schedule	<input checked="" type="checkbox"/> Yes	Section 1.2
2.0	Initial Identification of Sources and Contaminants		
	2.1 Sources and Contaminants Identification Table	<input checked="" type="checkbox"/> Yes	Section 2.0, Table 1
3.0	Assessment of the Significance of Contaminants and Sources		
	3.1 Identification of Negligible Contaminants and Sources	<input checked="" type="checkbox"/> Yes	Section 3, Table 1
	3.2 Rationale for Assessment	<input checked="" type="checkbox"/> Yes	Section 3
4.0	Operating Conditions, Emission Rate Estimating and Data Quality		
	4.1 Description of operating conditions, for each significant contaminant that results in the maximum POI concentration for that contaminant	<input checked="" type="checkbox"/> Yes	Section 4
	4.2 Explanation of Method used to calculate the emission rate for each contaminant	<input checked="" type="checkbox"/> Yes	Table 2B, Appendix C
	4.3 Sample calculation for each method	<input checked="" type="checkbox"/> Yes	Appendix C
	4.4 Assessment of Data Quality for each emission rate	<input checked="" type="checkbox"/> Yes	Table 2B, Appendix C
5.0	Source Summary Table and Property Plan		
	5.1 Source Summary Table	<input checked="" type="checkbox"/> Yes	Tables 2A & 2B
	5.2 Site Plan (scalable)	<input checked="" type="checkbox"/> Yes	Figure 2 (Appendix B)
6.0	Dispersion Modelling		
	6.1 Dispersion Modelling Input Summary Table	<input checked="" type="checkbox"/> Yes	Tables 4A and 4B
	6.2 Land Use Zoning Designation Plan	<input checked="" type="checkbox"/> Yes	Appendix B
	6.3 Dispersion Modelling Input and Output Files	<input checked="" type="checkbox"/> Yes	Tables 4A and 4B, CD
7.0	Emission Summary Table and Conclusions		
	7.1 Emission Summary Table	<input checked="" type="checkbox"/> Yes	Table 5
	7.2 Assessment of Contaminants with no MOE POI Limits	<input checked="" type="checkbox"/> Yes	N/A
	7.3 Conclusions	<input checked="" type="checkbox"/> Yes	Section 7.0
	Appendices (Provide supporting information or details such as...)		
	Proof of Legal Name / Figures & Zoning Map / Emission Calculations	<input checked="" type="checkbox"/> Yes	Appendix A / Appendix B / Appendix C
	TANKS Files / AERMOD Supporting Files / ESDM Checklist and Application Forms	<input checked="" type="checkbox"/> Yes	Appendix D / Appendix E / Appendix F
		<input type="checkbox"/> Yes	

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General Information and Instructions

General Information

Information requested in this form is collected under the authority of the *Environmental Protection Act* (EPA), *Ontario Water Resources Act* (OWRA) and Environmental Bill of Rights (EBR), and will be used to evaluate applications for Environmental Compliance Approvals (ECAs) issued under Part II.1 of the EPA. This application form should not be used for mobile PCB destruction facilities.

For all questions related to preparing or submitting this form or about the Ministry's collection of information related to applying for an ECA, contact:

Client Services and Permissions Branch
135 St. Clair Ave. West, 1st Floor
Toronto Ontario M4V 1P5
Telephone outside Toronto 1-800-461-6290 or in Toronto 416-314-8001.

Instructions

1. Applicants are responsible for ensuring that they complete the most recent application form. Application forms and information about the required supporting documentation and technical requirements are available from the Client Services and Permissions Branch (the address and phone number are provided in the General Information on this page). As well, you can get this information from your local District Office of the Ministry of the Environment and Climate Change, and online at: <https://www.ontario.ca/page/environmental-approvals>
2. A complete application consists of:
 - a completed and signed application form;
 - all required supporting documents and technical requirements identified in:
 - i. this form,
 - ii. Ministry guidance,
 - iii. the Applications for Environmental Compliance Approvals regulation, and
 - payment of the application fee (in Canadian funds) by certified cheque or money order made payable to the Minister of Finance, or credit card payment (for payments up to \$10,000). For Transfer of Review, make the cheque or money order payable to the appropriate municipality. **The Ministry may return or refuse incomplete applications to the applicant.** The Director may require additional information of any application initially accepted as complete.
3. Submit the complete application as follows:
 - One (1) paper copy (unless the application is a Transfer of Review), one (1) electronic copy and the fee to the Director, Client Services and Permissions Branch at the address provided in the General Information on this page.
 - If the application is a Transfer of Review, the applicant must submit two (2) copies of the completed application and the fee to the designated municipal authority.
4. The applicant must also send a copy of the application without the fee to the local Ministry District Office that has jurisdiction over the area where the facilities are located. DO NOT send payment to the District Office.
 - To locate the appropriate local Ministry District Office, visit the Ministry of the Environment and Climate Change website at: <http://www.ontario.ca/environment-and-energy/ministry-environment-and-climate-change-regional-and-district-offices>
5. For Waste Disposal Sites the applicant must also send a copy of the application without the fee to the Clerk's office of the local municipality (both upper and lower tier) in which the facility/proposed facility is located unless the application is for a revocation or an amendment that is environmentally insignificant or the applicant is a municipality. DO NOT send any payment information to the municipality.

Information collected by the Ministry of the Environment and Climate Change is subject to the *Freedom of Information and Protection of Privacy Act (FIPPA)*. If the applicant is of the view that any part of the application is confidential on the grounds that such information constitutes a trade secret or scientific, technical, commercial, financial or labour relations information, please make this known now. Otherwise, the Ministry may make the information available to the public without further notice to the applicant.

It is an offence under the EPA and OWRA to provide false or misleading information in this application and/or accompanying documents.

Complete the sections as shown below.

- Section 1: Applicant Information
- Section 2: Project Information
- Section 3: Regulatory Requirements
- Section 4: Site Information
- Section 5: Facility Information
- Section 6: Supporting Documentation
- Section 7: Payment Information
- Section 8: Authorization

Fields marked with an asterisk (*) are mandatory.

1. Applicant Information

1.1 Applicant Information

Applicant Type *

- ☒ Corporation
- ☐ Individual
- ☐ Federal Government
- ☐ Municipal Government
- ☐ Partnership
- ☐ Provincial Government
- ☐ Sole Proprietor
- ☐ Other (specify) _____

Applicant Name (Legal name of individual or organization as evidenced by legal documents) *

Ottawa D-Squared Construction Limited

☒ Select if Business Name same as Applicant Name

Business Name *

Ottawa D-Squared Construction Limited

Business Number	Business Website Address
809894348	

Primary North American Industry Classification System (NAICS) Code *

324121

Other NAICS Code

Separate list attached?

- ☐ Yes
- ☐ No

Business Activity Description

Asphalt Paving Mixture and Block Manufacturing

✓ Completion Status (1.1 Applicant Information)

1.2 Applicant Physical Address

Address Type? *

- ☒ Civic Address
- ☐ Survey Address

Civic Address

Unit Number	Street Number 6811	Street Name Hiram Road
-------------	-----------------------	---------------------------

Survey Address

Enter Lot and Concession or Part and Reference Plan

Lot	Concession	Part	Reference Plan
-----	------------	------	----------------

Municipality/Unorganized Township *	County/District		
Greely			
Province/State *	Country *	Postal/Zip Code *	
Ontario	Canada	K4P 1A2	
Telephone Number *	Fax Number	Mobile Number	Email Address *
613-880-6204 ext.			dave@dsqconstruction.com

Geo Reference

Description of location	Map Datum	Zone	Accuracy Estimate	Geo-Referencing Method	UTM Easting	UTM Northing
Southwest corner of property						
Physical location of front door or main entrance						

✓ Completion Status (1.2 Applicant Physical Address)

1.3 Applicant Mailing Address

☒ Select if same as Physical Address

Unit Number	Street Number *	Street Name *	
	6811	Hiram Road	
Delivery Designator	Delivery Identifier	Postal Station	
Municipality/Unorganized Township *	County/District		
Greely			
Province/State *	Country *	Postal/Zip Code *	
Ontario	Canada	K4P 1A2	
Telephone Number *	Fax Number	Mobile Number	Email Address *
613-880-6204 ext.			dave@dsqconstruction.com

✓ Completion Status (1.3 Applicant Mailing Address)

2. Project Information

2.1 Project Name and Description

Project Name *

1350-01.01

Project Description Executive Summary *

Ottawa D-Squared Construction Limited (D-Squared) wishes to apply for an Environmental Compliance Approval (Air & Noise) for their proposed hot-mix asphalt (HMA) plant with an aggregate depot.

The identified emissions from the HMA plant will be i) particulate, generated as a result of the handling and processing of aggregate materials; ii) particulate, polyaromatic hydrocarbons (assessed as benzo(a)pyrene [B(a)P]), benzene, and naphthalene, generated as a result of the delivery, storage, and use of asphalt cement; iii) particulate, polyaromatic hydrocarbons (assessed as B(a)P), benzene, naphthalene, and carbon monoxide generated as a result of the storage and transfer of HMA product; iv) particulate, nitrogen oxides, sulphur dioxide, carbon monoxide, polyaromatic hydrocarbons (assessed as B(a)P), benzene, naphthalene, arsenic, lead and nickel from the natural gas or no. 2 oil-fired dryer; and v) particulate, nitrogen oxides, sulphur dioxide, and carbon monoxide from the natural gas or no. 2 oil-fired hot-oil heater servicing the AC storage tanks.

The identified emissions from the aggregate depot will be i) particulate generated as a result of the handling and transfer of aggregate materials; and ii) respirable crystalline silica (RCS) (PM10) (quartz) generated as a result of the handling and transfer of RC.

Ontario Regulation 1/17 (O.Reg. 1/17) Schedule identifies high-risk or complex facilities which are ineligible for the Air Emissions EASR, based on their NAICS code. Since asphalt paving mixture and block manufacturing (NAICS code 324121) is included in this list, all of the facility's activities and equipment, must be approved under an ECA (Air and Noise).

Supplemental Application Information (select information button for required information for this field) *

One copy of the application and supporting documentation has been mailed to the District Manager at the Ministry of the Environment, Conservation and Parks (MECP) Ottawa District Office. One hard copy and one electronic copy of this application have been provided to the Client Services and Permissions Branch.



Completion Status (2.1 Project Name and Description)

2.2 Application Type

Type *

☒ New ECA

☐ Revocation of existing ECA

☐ Application for renewal of limited operational flexibility

☐ Amendment to existing ECA

☐ Administrative amendment to existing ECA

☐ Consolidation of existing ECAs

Is this application for the addition of a new project type to the site or a new municipal waste category/class code to the waste management systems or a new sewage facility type?

☐ Yes ☐ No

Is this application for Transfer of Review? *

☐ Yes ☒ No



Completion Status (2.2 Application Type)

2.3 Project Type

Project Type (Select all that apply) *	Limited Operational Flexibility?	Pilot Project?
<input checked="" type="checkbox"/> Air - Stationary	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Air - Mobile	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Noise	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Vibration	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Waste Disposal Site - Landfill site	N/A	<input type="checkbox"/>
<input type="checkbox"/> Waste Disposal Site - Transfer site	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Waste Disposal Site - Processing site	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Waste Disposal Site - Composting site	N/A	<input type="checkbox"/>
<input type="checkbox"/> Waste Disposal Site - Thermal Treatment site	N/A	<input type="checkbox"/>
<input type="checkbox"/> Sewage - Industrial	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sewage - Municipal	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Sewage - Private	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Waste Management System – General Waste Management System	N/A	<input type="checkbox"/>
<input type="checkbox"/> Waste Management System - Hauled Sewage (Septage)	N/A	<input type="checkbox"/>
<input type="checkbox"/> Waste Management System – Soil Conditioner for transport to a site for Application on Land	N/A	<input type="checkbox"/>
<input type="checkbox"/> Waste Management System - Mobile Waste Processing	N/A	<input type="checkbox"/>
<input type="checkbox"/> Cleanup of contaminated sites - Mobile	N/A	<input type="checkbox"/>
<input type="checkbox"/> Cleanup of contaminated sites - Site specific	N/A	<input type="checkbox"/>



Completion Status (2.3 Project Type)

2.4 Approval Information

Application initiated by *

☒ Applicant

☐ S. 20.18 Order (attach copy)

☐ Condition of existing approval

☐ Provincial Officer Order (attach copy)

☐ Inspection Report (attach copy)

☐ Other (specify) _____

Current Environmental Compliance Approvals that may be changed or amended by this application: ☒ N/A

Environmental Compliance Approval Number *	Date of Issuance (yyyy/mm/dd) *

Separate list attached?

☐ Yes ☒ No

Proposed Environmental Compliance Approvals related to this project: ☒ N/A

Project Type	Ministry Reference Number (if applicable)	Have Submitted	Have not Submitted
		<input type="checkbox"/>	<input type="checkbox"/>

Separate list attached?

☐ Yes ☒ No



Completion Status (2.4 Approval Information)

2.5 Other Approval/Permits for Facility ☒ N/A

List all other instruments (approvals or permits) issued by the Ministry of the Environment and Climate Change or applied for under the *Environmental Protection Act*, *Environmental Assessment Act*, *Ontario Water Resources Act* and *Safe Drinking Water Act*, 2002 and any Environmental Activity and Sector Registrations that are relevant to this application.

Instrument Type	Instrument Number/ Application Reference Number	Approval or Application Date (yyyy/mm/dd)

Separate list attached?

☐ Yes ☐ No

List all other instruments (approvals or permits) issued by an agency, municipality or another ministry that are relevant to this application.

Issuing Agency	Approval or Permit Name	Approval or Permit Number	Issued Date (yyyy/mm/dd)

Separate list attached?

☐ Yes ☐ No



Completion Status (2.5 Other Approval/Permits for Facility)

2.6 Technical Contacts

Technical Contact 1

Area of Responsibility (Select all that apply) *

☒ Air ☐ Noise/Vibration ☐ Sewage ☐ Waste

Name of Technical Contact

Last Name *

Ostronic

First Name *

Megan

Company *

BCX Environmental Consulting

Address Information

☐ Select if same as Applicant Mailing Address

Civic Address

Unit Number

Street Number *

109

Street Name *

Main Street South

Delivery Designator

Delivery Identifier

Postal Station

Municipality/Unorganized Township *

Newmarket

County/District

Province/State *

Ontario

Country *

Canada

Postal/Zip Code *

L3Y 3Y8

Telephone Number *

905-235-4218 ext. 117

Fax Number

Mobile Number

647-549-6349

Email Address *

mostronic@bcxenvironmental.com

Technical Contact 2

Area of Responsibility (Select all that apply) *

☐ Air ☒ Noise/Vibration ☐ Sewage ☐ Waste

Name of Technical Contact

Last Name *

Kulandaivelan

First Name *

Swetha

Company *

Howe Gastmeier Chapnik Limited

Address Information

☐ Select if same as Applicant Mailing Address

Civic Address

Unit Number

203

Street Number *

2000

Street Name *

Argentia Road

Delivery Designator

Delivery Identifier

Postal Station

Municipality/Unorganized Township *

Mississauga

County/District

Province/State *

Ontario

Country *

Canada

Postal/Zip Code *

L5N 1P7

Telephone Number *

905-826-4044

ext. 266

Fax Number

Mobile Number

Email Address *

skulandaivelan@hgcengineering.com



Completion Status (2.6 Technical Contacts)

3. Regulatory Requirements

3.1 Environmental Bill of Rights (EBR) Requirements

Is this a proposal for a prescribed instrument under the EBR? *

☒ Yes ☐ No

If yes, is this proposal exempted from the EBR requirements?

☐ Yes ☒ No

If yes, please check one of the following (Please provide supporting information.)

☐ This proposal has been considered in a substantially equivalent process of public participation. (EBR, 1993, s.30.)

Was the public participation process carried out in fulfillment of the requirements related to an approval under the *Planning Act*?

☐ Yes ☐ No

If yes, was the *Planning Act* approval related to a plan of subdivision?

☐ Yes ☐ No

☐ This proposal is for an emergency situation. (EBR, 1993, s. 29.)

☐ This proposal is for an amendment to or revocation of an existing Environmental Compliance Approval that is not environmentally significant. (EBR, 1993, s. 22 (3).)

☐ This proposal has been subject to or exempted from EAA Requirements or considered in a decision of a tribunal. (EBR, 1993, s. 32.)



Completion Status (3.1 Environmental Bill of Rights (EBR) Requirements)

3.2 Environmental Assessment Act (EAA) Requirements

Is the proposed undertaking subject to the requirements of the EAA? *

☐ Yes ☒ No

If yes, please select one of the following:

☐ The proposed undertaking has fulfilled the requirements of the EAA through the completion of a Class EA process

Name of Class EA _____

Schedule/Group/Category (if applicable) _____

If applicable, please submit a copy of the proof of completion (for example, Notice of Completion).

Was the undertaking subject of a Part II Order request(s)?

☐ Yes ☐ No

If yes, please submit a copy of the Director's or Minister's decision letter.

☐ The proposed undertaking has fulfilled all of the requirements for the EAA through:

Select all that apply:

☐ completion of an Environmental Screening Process pursuant to O. Reg. 101/07 of the EAA

☐ completion of an Environmental Screening Process pursuant to O. Reg. 116/01 of the EAA

Was the undertaking subject of an elevation request(s)?

☐ Yes ☐ No

If yes, please submit a copy of the Director's decision letter. If an appeal was made to the Director's decision, please also submit a copy of the Minister's decision letter.

☐ completion of an Environmental Screening Process pursuant to O. Reg. 231/08 of the EAA

Was the undertaking subject of an objection(s)?

☐ Yes ☐ No

If yes, please submit a copy of the Minister's decision letter.

☐ The proposed undertaking has fulfilled the requirements of the EAA through the completion of an individual Environmental Assessment.

Please submit a copy of the signed Notice of Approval.

Was the undertaking exempted from the requirements of the EAA? *

☐ Yes ☒ No

The proposed undertaking has fulfilled the requirements of the EAA through an exemption provided under:

Select one of the following

☐ Section _____ of Ontario Regulation No. _____ or

☐ Declaration/Exemption Order Number _____

If Regulation, Declaration Order or Exemption Order does not refer directly to this undertaking, please provide supporting documentation to explain why it applies to this facility

✓ Completion Status (3.2 *Environmental Assessment Act* (EAA) Requirements)

3.3 Consultation/Notification

Indigenous Consultation:

Is the proposed project/activity on Crown land or does/would it alter access to Crown land? * ☐ Yes ☒ No

Is the proposed project/activity in an open or forested area where hunting, trapping or plant gathering could occur? * ☐ Yes ☒ No

Does the proposed project/activity involve the clearing of forested land? * ☐ Yes ☒ No

Could the proposed project/activity impact a water body (e.g., direct discharge) or alter access to a water body? * ☐ Yes ☒ No

Could the proposed project/activity impact cultural heritage or archaeological resources, or access to them? * ☐ Yes ☒ No

Is the proposed project/activity adjacent or close to a First Nation Reserve? * ☐ Yes ☒ No

Is the applicant aware of any concerns from Indigenous communities about this proposed project/activity? * ☐ Yes ☒ No

Were there conditions placed, or direction provided, in another (or previous) permit or approval for consultation in relation to this project/activity? * ☐ Yes ☒ No

Based on the online Guide to Applying for an Environmental Compliance Approval, or direction provided by the ministry or another agency, are Indigenous consultation activities likely required as part of this application process? * ☐ Yes ☒ No

If Yes to the question above, please describe the consultation/notification activities undertaken for this application or as part of another process (e.g., EAA) in relation to the proposed project/activity, including a summary of the notification/consultation, First Nation and Métis communities contacted, key issues raised and how they were addressed, any changes to the project as a result of these activities, and any planned consultation/notification activities in the future.

Please attach supporting documents (e.g., record of consultation, delegation letter and/or direction provided by the Crown, materials provided to communities, meeting notes and agendas, correspondence with communities as appropriate).

If the applicant has determined that consultation with First Nation and Métis communities is not likely required for the proposed project/activity, please provide a rationale why: *

The site is not near any First Nation / Métis communities.

Other Consultation/Notification:

Has the applicant had a ministry pre-application consultation in relation to the proposed project? *

☐ Yes ☒ No

If this application is for a waste disposal site, have the neighbour notification requirements been completed? *

☐ Yes ☐ No

If yes, please attach a Public Consultation/Notification Report that includes the notice and list of recipients.

If no, please select the reason for not undertaking neighbour notification: *

☐ Application is for an administrative amendment

☐ The proposal was subject to public consultation through an Environmental Assessment process

☐ other , please explain _____

Are there any other consultation/notification activities that have been undertaken to fulfill requirements by other legislation or through voluntary efforts? *

☐ Yes ☒ No

If yes, please:

1. describe the consultation/notification activities below; and
 2. attach documents describing each of these consultation\nnotification activities, any changes to the project as a result of these activities and any planned consultation/notification activities in the future.
-



Completion Status (3.3 Consultation/Notification)

4. Site Information

4.1 Site Address or Storage Location

Will the vehicles or equipment be stored at more than one location?

☐ Yes ☐ No

(If yes, please enter all vehicle or equipment storage locations below and attach separate list, as necessary.)

☐ Select if same as Applicant Physical Address

Address Type? *

☒ Civic Address ☐ Survey Address

Primary Civic Address

Unit Number	Street Number *	Street Name *
	5455	Boundary Road

Additional Civic Addresses

Unit Number	Street Number	Street Name
-------------	---------------	-------------

Separate list attached?

☐ Yes ☐ No

Primary Survey Address

Enter Lot and Concession or Part and Reference Plan

Lot	Concession	Part	Reference Plan
-----	------------	------	----------------

Additional Survey Address

Enter Lot and Concession or Part and Reference Plan

Lot	Concession	Part	Reference Plan
-----	------------	------	----------------

Separate list attached?

☐ Yes ☐ No

Municipality/Unorganized Township *	County/District
Navan	

Province/State *	Country *	Postal/Zip Code *
Ontario	Canada	K4B 1P6

Non-address Information (includes any additional information to clarify the physical location)

Geo Reference (required)

☐ Select if same as Applicant Physical Geo Reference

Description of location	Map Datum *	Zone *	Accuracy Estimate *	Geo-Referencing Method *	UTM Easting *	UTM Northing *
Southwest corner of property	NAD83	18	+/- 10 m	Google Earth	465,482.09	5,020,865.49
Physical location of front door or main entrance	NAD83	18	+/- 10 m	Google Earth	465,464.78	5,020,922.97

✓ Completion Status (4.1 Site Address or Storage Location)

4.2 Site or Storage Location Information

Site Name *

Ottawa Facility

Days and Hours of Operation *

24 hrs / day, up to 7 days per week

Ministry of the Environment and Climate Change District Office *

Ottawa District Office

Is the site (property) that is the subject of this application owned by the applicant? *

☒ Yes ☐ No

If no, please include the owner's name, address and a signed document indicating that the applicant has the authority to install and operate the proposed activity, or store vehicles or equipment on the land.

Is the applicant the operating authority of the site that is the subject of this application? *

☒ Yes ☐ No

If no, please include the operating authority name, address and phone number.

Is the site located in an area of development control as defined by the *Niagara Escarpment Planning and Development Act* (NEPDA)? *

☐ Yes ☒ No

If yes, please attach a copy of the NEPDA permit for proposed activity.

Is the site within an area covered by the Oak Ridges Moraine Conservation Plan? *

☐ Yes ☒ No

If yes, please attach proof of municipal planning approval for the proposed activity/work (for example, zoning by-law, letter from municipality, etc.).

✓ Completion Status (4.2 Site or Storage Location Information)

4.3 Site Zoning and Classification ☐ N/A

Current Land Use *

Industrial

Official Plan Designation *

RH

Current Zoning (Please attach zoning map, if available.) *

RH - Rural Heavy Industrial Zone

Adjacent Land Use (select all that apply) *

☐ Industrial

☒ Agricultural

☐ Commercial

☐ Recreational

☐ Residential

☒ Other (specify) * Undeveloped, forest

Adjacent Land Zoning *

RH[818r], RH[860r] H(18)-h, RU

Does the current zoning permit the proposed activity? *

☒ Yes ☐ No

Does the applicant have correspondence from the municipality to confirm that the current zoning of the property permits the proposed use? *

☐ Yes ☒ No If yes, please attach correspondence from the municipality.

Does the official plan designation support the proposed activity? *

☒ Yes ☐ No ☐ N/A

✓ Completion Status (4.3 Site Zoning and Classification)

4.4 Point of Entry into Ontario ☐ N/A

(for waste management system vehicles that are stored at an address outside of Ontario)

City in closest proximity to the point of entry

Description of Point of Entry



Completion Status (4.4 Point of Entry into Ontario)

4.5 Source Protection/Drinking Water Threats (sewage or waste disposal site applications only) ☐ N/A

Check the source protection area(s) where the activity is/will be located *

- | | | |
|---|--|--|
| <input type="checkbox"/> Ausable Bayfield | <input type="checkbox"/> Cataraqui Region | <input type="checkbox"/> Catfish Creek |
| <input type="checkbox"/> Central Lake Ontario | <input type="checkbox"/> Credit Valley | <input type="checkbox"/> Crowe Valley |
| <input type="checkbox"/> Essex | <input type="checkbox"/> Ganaraska | <input type="checkbox"/> Grand River |
| <input type="checkbox"/> Grey Sauble | <input type="checkbox"/> Halton | <input type="checkbox"/> Hamilton |
| <input type="checkbox"/> Kawartha-Haliburton | <input type="checkbox"/> Kettle Creek | <input type="checkbox"/> Long Point |
| <input type="checkbox"/> Lakehead | <input type="checkbox"/> Lake Simcoe and Couchiching/Black River | <input type="checkbox"/> Lower Trent |
| <input type="checkbox"/> Lower Thames Valley | <input type="checkbox"/> Maitland Valley | <input type="checkbox"/> Mattagami |
| <input type="checkbox"/> Mississippi Valley | <input type="checkbox"/> Niagara | <input type="checkbox"/> North Bay Mattawa |
| <input type="checkbox"/> Northern Bruce Peninsula | <input type="checkbox"/> Nottawasaga Valley | <input type="checkbox"/> Rideau Valley |
| <input type="checkbox"/> Raisin Region | <input type="checkbox"/> South Nation | <input type="checkbox"/> Saugeen Valley |
| <input type="checkbox"/> Sault Ste. Marie | <input type="checkbox"/> Severn Sound | <input type="checkbox"/> Sudbury |
| <input type="checkbox"/> St. Clair Region | <input type="checkbox"/> Toronto and Region | <input type="checkbox"/> Otonabee-Peterborough |
| <input type="checkbox"/> Outside a source protection area | <input type="checkbox"/> Quinte | <input type="checkbox"/> Upper Thames River |

Is the proposed activity located or planned to be located in a vulnerable area identified in a local assessment report source protection plan under the *Clean Water Act, 2006*? *☐ Yes ☐ No

If yes, what is/are the vulnerable area(s)/zone(s)? *

- ☐ Wellhead Protection Areas ☐ Surface Water Intake Protection Zones ☐ Highly Vulnerable Aquifers
- ☐ Significant Groundwater Recharge Areas

Is the activity being applied for identified as a significant drinking water threat in the assessment report for the local source protection area? *

☐ Yes ☐ No

Completion Status (4.5 Source Protection/Drinking Water Threats)

4.6 Receiver of Effluent Discharge (sewage applications only) ☐ N/A

Intermediate Receiver Name *

Watershed Name *

Type of Receiver *☐ Surface Water ☐ Groundwater ☐ Other (specify) *

Has the facility received local Conservation Authority clearance? (for stormwater management facility discharging to the natural environment) *

☐ Yes ☐ No

If yes, please include a copy of the Conservation Authority clearance.

Final Receivers ☐ N/A

Will the proposed activity discharge sewage to any of the following critical receivers? *

- ☐ Lake Simcoe
- ☐ Rideau River
- ☐ Detroit River
- ☐ Great Lakes
- ☐ Rouge River
- ☐ Bay of Quinte
- ☐ Other (specify) * _____

Is the receiver a Policy 2 receiver? *

☐ Yes ☐ No

Does the applicant have a Policy 2 deviation approval from the directors? *

☐ Yes ☐ No

If yes, please attach a copy of the Director’s approval.

 Completion Status (4.6 Receiver of Effluent Discharge)

5. Facility Information

5.1 Air Note** - If the application does not have air emissions please proceed to Section 5.2

[Information](#)

5.1.1 Summary of Equipment that Discharges Contaminants to the Air

Select Type of Equipment *	Number of Pieces of Equipment *
<input checked="" type="checkbox"/> Combustion equipment that uses natural gas, propane, no. 2 oil, landfill gas or sewage treatment gas for fuel for the purpose of providing comfort heating or emergency power, producing hot water or steam, or heating material in a system that does not discharge to the atmosphere (Total Heat input of all units: $\leq 50,000,000$ kJ/hr)	N/A
<input checked="" type="checkbox"/> Storage tanks	N/A
<input type="checkbox"/> Welding operations that use a maximum of 10 kilograms of welding rod per hour	N/A
<input type="checkbox"/> Combustion equipment that uses waste-derived fuel for the purpose of providing comfort heating, burning ≤ 15 litres per hour	
<input type="checkbox"/> Heat cleaning ovens used for parts cleaning and associated parts washers or degreasing equipment, other than solvent degreasing equipment	
<input type="checkbox"/> Cooling towers	
<input checked="" type="checkbox"/> Equipment used to control emissions of contaminants, other than a fume incinerator	1
<input type="checkbox"/> Laboratory fume hoods	
<input type="checkbox"/> Paint spray booths and associated equipment that have a design capacity of up to 8 litres per hour of paint	
<input type="checkbox"/> Grain dryers	
<input checked="" type="checkbox"/> Any other equipment not listed above with a flow rate of less than or equal to $1.5 \text{ m}^3/\text{second}$	2
<input type="checkbox"/> Any other equipment not listed above with a flow rate of greater than $1.5 \text{ m}^3/\text{second}$	
<input type="checkbox"/> Equipment that is subject to an Environmental Compliance Approval, and from which there is no proposed increase in the discharge of any contaminant that was previously reviewed by the Director.	N/A



Completion Status (5.1.1 Summary of Equipment that Discharges Contaminants to the Air)

5.1.2 Emission Summary and Dispersion Modelling (ESDM) Report

Is the review of an existing, approved ESDM required as part of this proposed application? *

☐ Yes ☒ No

If yes, identify the number of emission sources described in the existing ESDM Report that emit contaminants in common with the sources forming the subject of the application (if none, enter zero).

Have all of these emission sources been described in an ESDM Report that was previously reviewed as part of an application for an existing Environmental Compliance Approval? *

☐ Yes ☒ No



Completion Status (5.1.2 ESDM Report)

5.1.3 O. Reg. 419/05 Requirements

Which of the following sections of O. Reg. 419/05 applies to the facility? *

☐ s.19 (Schedule 2)

☒ s. 20 (Schedule 3)

☐ Does not apply. Please indicate reason _____

Has an instrument under O. Reg. 419/05 been issued? *

☐ Yes ☒ No

If yes, what type(s) of instruments (including any notices, orders or approvals) has (have) been issued? (select all that apply)

☐ ss. 4(2) Adjacent Properties

☐ ss. 7(1) Specified Dispersion Models

☐ ss. 8(2) Negligible Sources

☐ ss. 10(2) Operating Conditions

☐ ss. 11(2) Refined Emission Rates

☐ ss. 13.1 Value of Dispersion Modeling Parameters

☐ ss. 13(1) Meteorological Data

☐ ss. 14(6) Area of Modelling Coverage

☐ ss. 20(4) Speed-up Request

☐ ss. 20(5) Speed-up Order

☐ s. 35 Site-specific Standard

☐ ss. 35(14) Site-specific Standard Order

☐ ss. 39(3) Technical Standard Registration (Industry Standard)

☐ ss. 39(4) Technical Standard Registration (Equipment Standard)

☐ Other (list all that have been issued) _____

Is an instrument under O. Reg. 419/05 being requested as part of this application? *

☐ Yes ☒ No

If yes, what type(s) of notice, order or approval is (are) being requested?

☐ ss. 7(1) Specified Dispersion Models

☐ ss. 8(2) Negligible Sources

☐ ss. 10(2) Operating Conditions

☐ ss. 11(2) Refined Emission Rates

☐ ss. 13(1) Meteorological Data

☐ ss. 14(6) Area of Modelling Coverage

☐ ss. 20(4) Speed-up Request

☐ s. 32 Request for a Site-specific Standard Order

☐ ss. 39(1)(a) Application for Technical Standard Registration (Industry Standard)

☐ ss. 39(1)(b) Application for Technical Standard Registration (Equipment Standard)

☐ Other (list all that have been issued) _____

Please attach the form(s) requesting the notice(s) and/or order(s) and any additional supporting information.

Has an s. 30 Upper Risk Threshold (Schedule 6) been exceeded? *

☐ Yes ☒ No

If yes, please include additional supporting information.

Is the facility located in a multi-tenant building? *

☐ Yes ☒ No

If yes, additional information may be requested.

Are all of the contaminants to which the application relates represented in the Ministry of the Environment and Climate Change publication titled "Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution- Local Air Quality" or have they been screened out based on the publication titled " Jurisdictional Screening Level (JSL) List, A Screening Tool for Ontario Regulation 419: Air Pollution - Local Air Quality"? *

☒ Yes ☐ No

(If no, please attach Supporting Information for a Maximum Ground Level Concentration Acceptability Request for Compounds with no Ministry POI Limit - Supplement to Application for Approval, EPA S. 9).

✓ Completion Status (5.1.3 O. Reg. 419/05 Requirements)

✓ Completion Status (5.1 Air)

5.2 Noise Note** - If the application does not have noise emissions please proceed to Section 5.3

5.2.1 Noise Assessment Information

Has an Acoustic Assessment Report (AAR) been completed in relation to the proposed project/activity? *

☒ Yes ☐ No

If yes, please attach the Acoustic Assessment Report

Does the AAR show that applicable limits are met? *

☒ Yes ☐ No

If no, please attach the Acoustic Assessment Report including the Noise Abatement Action Plan

If no, is the application eligible for Primary or Secondary Noise Screening? *

☐ Yes ☐ No

Note that if the proposed activity is not eligible for either of the screenings, an AAR must be submitted.

If yes, is the proposed activity eligible for the Primary Noise Screening? *

☐ Yes ☐ No

If yes, is the actual separation distance between the facility and the nearest noise sensitive point of reception (POR) greater than the minimum required separation distance calculated from the Primary Noise Screening? *

☐ Yes ☐ No

If yes, please attach the Primary Noise Screening form and supporting documentation.

Note that if the Primary Noise Screening is not successful then the applicant may attempt to proceed with the Secondary Noise Screening.

If no, does the Secondary Noise Screening Form show that the applicable sound level limits are met? *

☐ Yes ☐ No

If yes, please attach the Secondary Noise Screening Form and supporting documentation.

Note that if meeting the applicable sound level limits cannot be demonstrated, then an AAR must be submitted.

✓ Completion Status (5.2.1 Noise Assessment)

5.2.2 Equipment Subject to Noise Review

Description *	Number of Pieces of Equipment *
<input type="checkbox"/> Arc Furnaces	
<input checked="" type="checkbox"/> Asphalt Plants	1
<input type="checkbox"/> Blow-down Devices	
<input type="checkbox"/> Co-Generation Facilities	
<input checked="" type="checkbox"/> Crushing Operations	1
<input type="checkbox"/> Flares	
<input type="checkbox"/> Gas Turbines	
<input type="checkbox"/> Pressure Blowers or Large Induced Draft Fans (flow rate > 47 m ³ /second or static pressure > 1.25 kilopascals)	
<input type="checkbox"/> Any other equipment not listed above that has not previously been reviewed by the Director in connection with an application for an Environmental Compliance Approval with respect to the facility	
<input type="checkbox"/> Any other equipment not listed above that is identical to equipment for which a noise assessment was previously reviewed by the Director in connection with an application for an Environmental Compliance Approval with respect to the facility	

✓ Completion Status (5.2.2 Equipment Subject to Noise Review)

✓ Completion Status (5.2 Noise)

5.3 Sewage Works [Information](#)

Note** - If the application does not contain Sewage Works please proceed to Section 5.4

5.3.1 Facility Type - Sewage Works

Select the type of facility that is the subject of the application (select all that apply). *

☐ Sewage Treatment Plant (STP) ☐ Stormwater Management Facility

For the following, the applicant must complete and attach the relevant sections of the pipe data form:

☐ Storm Sewers ☐ Ditches ☐ Combined Sewers
☐ Force mains ☐ Sanitary Sewers ☐ Pumping Station

Sewage Treatment Plant Details

☐ Primary ☐ Secondary ☐ Tertiary
☐ Receives septage ☐ Constructed/Engineered Wetlands ☐ On-site system

☐ Lagoons (check all that apply below) *

☐ Septage ☐ Municipal ☐ Other (specify) *

Facility Type *

☐ Municipal or private facility

Category: * ☐ New ☐ 1 ☐ 2 ☐ 3 ☐ 4

Please indicate the maximum design capacity of the municipal or private sewage treatment plant: *

☐ ≤ 4,500 m³/day ☐ > 4,500 m³/day

☐ Facility for the treatment of leachate

Category: * ☐ New ☐ 1 ☐ 2 ☐ 3 ☐ 4

☐ Facility for the treatment of industrial process wastewater

Category: * ☐ New ☐ 1 ☐ 2 ☐ 3 ☐ 4

☐ Facility for the disposal of non-contact cooling water

☐ Subsurface disposal

Please indicate the design capacity of the subsurface disposal: *

☐ $\leq 15\text{m}^3/\text{day}$ ☐ $> 15\text{m}^3/\text{day}$ and $< 50\text{m}^3/\text{day}$ ☐ $> 50\text{m}^3/\text{day}$

Stormwater Management Facility Details

Category: * ☐ New ☐ 1 ☐ 2 ☐ 3 ☐ 4

Pond Type *

☐ Wet Pond ☐ Dry Pond ☐ Other (specify) * _____

What is the drainage area (in hectares) associated with the proposed activity? * _____

Does the applicant own all, or part of the drainage area? *

☐ Applicant owns all of the drainage area

☐ Applicant owns part of the drainage area

☐ Applicant does not own the drainage area

For the drainage area land that the applicant does not own, does the applicant have an agreement with the owner(s) of the drainage area? *

☐ Yes ☐ No

What is the predominant type of land use in the drainage area? *

☐ Rural or Agricultural ☐ Commercial or Industrial ☐ Residential

Is a Hydrogeological Assessment required? *

☐ Yes ☐ No

(If yes, please attach the hydrogeological assessment.)

Is a review of effluent criteria assessment for stormwater management, cooling water or soil remediation facilities required? *

☐ Yes ☐ No

(If yes, please attach the final effluent criteria accepted by the Regional Office of the Ministry.)

Is a review of effluent criteria assessment for municipal or private sewage, industrial process wastewater or leachate treatment plant required? *

☐ Yes ☐ No

(If yes, please attach the final effluent criteria accepted by the Regional Office of the Ministry.)

Note: The Hydrogeological Assessment, effluent criteria, and surface water assessment must be discussed and prepared with the Ministry's regional technical support section during a pre-application meeting(s) and consultation(s) with the Ministry. A proof of concurrence from technical support must be included as part of the ECA application package.

✓ Completion Status (5.3.1 Facility Type - Sewage Works)

5.3.2 Servicing

The works will provide sewage servicing for (select all that apply): *

☐ Residential

Residential Type *

☐ Subdivision

☐ Condominium

☐ Institutional

☐ Other (specify) * _____

Is there a Municipal Responsibility Agreement in place? *

☐ Yes ☐ No ☐ N/A

(If yes, please attach a copy of the Municipal Responsibility Agreement.)

☐ Commercial

Commercial Type *

☐ Hotel, Motel, Inn

☐ Campground, Park

☐ Rental Cabins

☐ Resort

☐ Shopping Malls

☐ Restaurant

☐ Highway Service Station/Gas Bars

☐ Other (specify) * _____

☐ Industrial

Describe * _____



Completion Status (5.3.2 Servicing)

5.3.3 Sewage Servicing for Waste Disposal/Landfill Sites

Does/Will the sewage treatment facility receive waste disposal/landfill site leachate? *

☐ Yes ☐ No

If yes, please identify the site(s) below.

Name of Site Contributing Leachate *	Environmental Compliance Approval Number *	Volume of Leachate (m ³) *
1.		



Completion Status (5.3.3 Sewage Servicing for Waste Disposal/Landfill Sites)



Completion Status (5.3 Sewage Works)

5.4 Waste Disposal Site

Note** - If the application is not for a waste disposal or processing site please proceed to Section 5.5

5.4.1 Facility Description - Waste Disposal Site (information on the nature of the proposed business or activity at this site)

Service Area *

Total Area of Site (hectares) * _____

Monitoring (select all that apply) *

☐ Groundwater

☐ Surface Water

☐ Landfill Gas

☐ Leachate

☐ None

☐ Other (specify) * _____

Type(s) of waste to be accepted at this site (select all that apply) *

Subject:

Non-subject:

☐ Hazardous Waste

☐ Municipal (non-hazardous)

☐ Liquid Industrial Waste

☐ Other Liquid Waste

Municipal waste categories to be accepted at this site (select all that apply) *

☐ All Categories

☐ Contaminated Soil

☐ Domestic Sources

☐ IC & I Sources

☐ Source Separated Organics

☐ Tires

☐ Leaf and Yard Waste

☐ Wood Waste

☐ Blue Box Materials

☐ Other (specify) * _____

Other liquid waste categories to be accepted at this site (select all that apply) *

☐ Processed Organics

☐ Hauled Sewage

☐ Waste from Food Processing/Preparation Operations

☐ Other (specify) * _____

Hazardous Waste / Liquid Industrial Waste

Class Code *	Class Code	Class Code	Class Code	Class Code

✓ Completion Status (5.4.1 Facility Description - Waste Disposal Site)

5.4.2 Waste Transfer/Processing/Composting - Complete this information if waste transfer and/or processing and/or composting take(s) place at this facility

Waste Type to be Transferred or Processed *

☐ Hazardous waste or liquid industrial waste

Design Capacity *

☐ ≤ 100 tonnes per day ☐ > 100 tonnes per day

☐ Waste other than hazardous waste and liquid industrial waste

Design Capacity *

☐ ≤ 100 tonnes per day ☐ > 100 tonnes per day

Change to Operations *

☐ No Change Proposed

☐ Change does not require fundamental design review

☐ Change requires fundamental design review

Liquid Waste

Maximum Storage Capacity (m³)

Hazardous *	Liquid Industrial *	Other Liquid Waste *

Maximum Residual for Final Disposal (m³)

Hazardous		Liquid Industrial Waste		Other Liquid Waste	
Daily *	Annually *	Daily *	Annually *	Daily *	Annually *

Solid Waste

Maximum Storage Capacity (tonnes)

Hazardous *	Non-Hazardous *

Maximum Residual for Final Disposal (tonnes)

Hazardous		Non-hazardous	
Daily *	Annually *	Daily *	Annually *

Maximum Amount of Waste to be Received Daily

Liquid (m³)			Solid (tonnes)	
Hazardous *	Liquid Industrial *	Other Liquid Waste *	Hazardous *	Non-hazardous *

✓ Completion Status (5.4.2 Waste Transfer/Processing/Composting)

5.4.3 Thermal Treatment Facility - Complete this information if thermal treatment takes place at this facility

Waste Type for Thermal Treatment *

☐ Hazardous waste or liquid industrial waste

Design Capacity *

☐ ≤ 100 tonnes per day ☐ > 100 tonnes per day

☐ Waste other than hazardous waste and liquid industrial waste

Design Capacity *

☐ ≤ 100 tonnes per day ☐ > 100 tonnes per day

Change to Operations *

☐ No Change Proposed

☐ Change does not require fundamental design review

☐ Change requires fundamental design review

Liquid Waste

Maximum Storage Capacity (m³)

Hazardous *	Liquid Industrial *	Other Liquid Waste *
-------------	---------------------	----------------------

Maximum Residual for Final Disposal (m³)

Hazardous		Liquid Industrial Waste		Other Liquid Waste	
Daily *	Annually *	Daily *	Annually *	Daily *	Annually *

Solid Waste

Maximum Storage Capacity (tonnes)

Hazardous *	Non-Hazardous *
-------------	-----------------

Maximum Residual for Final Disposal (tonnes)

Hazardous		Non-hazardous	
Daily *	Annually *	Daily *	Annually *

Maximum Amount of Waste to be Received Daily

Liquid (m³)			Solid (tonnes)	
Hazardous *	Liquid Industrial *	Other Liquid Waste *	Hazardous *	Non-hazardous *

Maximum Daily Feed Rate (tonnes/m³)

Hazardous Waste (tonnes) *	Non-hazardous Waste (tonnes) *	Liquid Industrial Waste (m³) *	Other Liquid Waste (m³) *
----------------------------	--------------------------------	--------------------------------	---------------------------

✓ Completion Status (5.4.3 Thermal Treatment Facility)

5.4.4 Landfill Site - Complete this information if this facility operates as a landfill site

Waste Types to be accepted at the Landfill *

☐ Hazardous waste or liquid industrial waste

Design Capacity *

☐ ≤ 40,000 m³ ☐ > 40,000 m³ ≤ 3 million m³ ☐ > 3 million m³

☐ Waste is only uncontaminated tree stumps, leaves, branches, concrete and rocks

Design Capacity *

☐ ≤ 40,000 m³

☐ > 40,000 m³ ≤ 3 million m³

☐ > 3 million m³

☐ Waste other than hazardous waste and liquid industrial waste, other than uncontaminated tree stumps, leaves, branches, concrete and rocks.

Design Capacity *

☐ ≤ 40,000 m³

☐ > 40,000 m³ ≤ 3 million m³

☐ > 3 million m³

Change to Operations *

☐ No Change Proposed

☐ Change does not require fundamental design review or hydrogeological assessment

☐ Change requires fundamental design review or hydrogeological assessment

Note: The Hydrogeological Assessment, effluent criteria, and surface water assessment must be discussed and prepared with the Ministry's regional technical support section during a pre-application meeting(s) and consultation(s) with the Ministry. A proof of concurrence from technical support must be included as part of the ECA application package.

Maximum Landfilling Capacity (m³)

Hazardous Waste *

Non-hazardous Waste *

Liquid Industrial Waste *

Other Liquid Waste *

Maximum Amount of Waste to be Received

Hazardous Waste (tonnes)

Non-hazardous Waste (tonnes)

Liquid Industrial Waste (m³)

Other Liquid Waste (m³)

Daily *

Annually *

Daily *

Annually *

Daily *

Annually *

Daily *

Annually *

Landfill Information

Area to be Landfilled (hectares) *

Total Site Area including Buffer Area (hectares) *

Estimated Date of Closure (yyyy/mm/dd) *

Population Served

Control Types (select all that apply) *

☐ Leachate Collected and Treated Off-site

☐ Leachate Collected and Treated On-site

☐ Landfill Gas Collected and Flared

☐ Landfill Gas Collected for Energy Generation

☐ Other (specify) *



Completion Status (5.4.4 Landfill Site)



Completion Status (5.4 Waste Disposal Site)

5.5 Waste Management Systems (Except Mobile Waste Processing)

Note**- If the application is not for a waste management system please proceed to Section 5.7.

5.5.1 Fleet List (all vehicles and equipment to be used in the operation of the Waste Management System)

Year *	Make *	Model *	Vehicle Identification Number (VIN) *	License Plate Number *	Province/State *

Separate list attached?

☐ Yes ☐ No



Completion Status (5.5.1 Fleet List)

5.5.2 Vehicle Information

Are all the vehicles to be used owned by the applicant? *


☐ Yes ☐ No

If no, please include additional information about ownership arrangements for each vehicle not owned by the applicant.

Has a minimum of \$1,000,000.00 liability insurance been obtained for all vehicles for which it is required? *

☐ Yes ☐ No

Describe any additional insurances that are held (for example, environmental impairment liability insurance).

 Completion Status (5.5.2 Vehicle Information)

5.5.3 General Waste Management System

Type(s) of Waste to be Transported by the General Waste Management System (select all that apply) *

Subject:

☐ Hazardous Waste
☐ Liquid Industrial Waste

Non-subject:

☐ Municipal (non-hazardous)
☐ Other Liquid Waste

Non-subject Categories to be Transported by the General Waste Management System (select all that apply) *

☐ Blue Box Materials
☐ Commercial
☐ Leaf/Yard Waste
☐ Spill Cleanup Material
☐ Tires
☐ Waste Wash Water
☐ Waste from Food Processing/ Preparation Operations
☐ Processed Organics (not for land application)

☐ Domestic Sources
☐ Non-Hazardous Solid Industrial
☐ Wood Waste
☐ Contaminated Soil
☐ Asbestos Waste in Bulk
☐ Grease Trap Waste
☐ Dewatered Catch Basin Clean-out Material
☐ Other (specify) * _____

Subject Waste Categories to be Transported by the General Waste Management System

Hazardous Waste / Liquid Industrial Waste

Class Code *	Class Code	Class Code	Class Code	Class Code

Separate list attached?

☐ Yes ☐ No

- ☐ All drivers are/will be trained in accordance with O. Reg. 347 and all pertinent environmental legislation.
- ☐ Each vehicle used to transport a specific subject waste class is suitable for that waste transportation in order to protect the health and safety of the public and the natural environment.

Note: For transporters of pathological waste and PCBs (waste classes 243 and 312) Operations Manual and Driver Training Manual must also be attached and Financial Assurance must be provided.

General Waste Management System - Disposal Site Information

What is the Final Destination of Waste to be Transported by the General Waste Management System? (select all that apply) *

☐ A disposal site in Ontario approved by the Ministry of the Environment and Climate Change
☐ Disposal sites outside of Ontario approved by another regulatory agency

List the destination province(s)/state(s)

Province/State *	Province/State	Province/State	Province/State

✓ Completion Status (5.5.3 General Waste Management System)

5.5.4 Soil Conditioner Waste Management System (includes non-agricultural source material (NASM) that is waste and processed organic waste (biosolids) destined for land application only)

Has the applicant received recommendation from Biosolids Utilization Committee (BUC) for land application of processed organic waste (biosolids) or NASM? *

☐ Yes If yes, please provide a copy of the BUC recommendation.

☐ No If no, please clarify *

Spreading equipment (land application only)

Equipment Type	Make and Model	Description

Separate list attached?

☐ Yes ☐ No

Method of system operation (land application only)

Estimated quantity to be handled on an annual basis (cubic metres/litres/tonnes) *

Please describe the loading procedures: *

Please describe the spreading methods: *

Please describe the storage facilities (tanks, lagoons, etc.): *

Soil Conditioner Waste Management System - Land Application Sites

What is the final destination of waste to be transported by the soil conditioner waste management system? (must include for land application only) *

☐ Non-agricultural land

☐ Agricultural land

☐ Both agricultural and non-agricultural land

✓ Completion Status (5.5.4 Soil Conditioner Waste Management System)

5.5.5 Hauled Sewage (Septage) Waste Management System

Type(s) of hauled sewage (septage) to be transported *

☐ Portable toilet waste

☐ Septic tank waste

☐ Holding tank waste

☐ Other (specify) *

Spreading equipment (land application only)

Equipment Type	Make and Model	Description

Separate list attached?

☐ Yes ☐ No

Does this system include in-transit storage? *

☐ Yes ☐ No

If yes:

a) What is the duration of storage? Please specify (Maximum period of in-transit storage should not exceed more than two weeks): *

b) Is the storage tank a prefabricated tank with the capacity < 100,000 L, designed and constructed in accordance with a Class 5 Sewage System under the Ontario Building Code or CAN/CSA B66-05? *

☐ Yes ☐ No If no, please provide a copy of the design of the storage tank signed and dated by a professional engineer.

Does this system include in-transit processing? *

☐ Yes ☐ No

If yes:

a) Location of in-transit processing: *

☐ In Vehicle ☐ In-storage Tank

b) Describe the method of in-transit processing: *

Does this system use barge/boat to transport hauled sewage (septage)? *

☐ Yes ☐ No

If yes:

a) Has a minimum of \$1,000,000.00 liability insurance been obtained for the barge/boat for which it is required? *

☐ Yes ☐ No

b) Does the barge/boat have an engine of 10 horsepower (hp) or more, for which a commercial vessel license is required from Transport Canada? *

☐ Yes ☐ No If yes, please include a copy of the commercial vessel license.

Note: For in-transit storage or processing the applicant must include with the application the consent of the landowner, if the landowner is different than the applicant. A financial assurance estimate must be provided by applicants using in-transit storage or using in-transit processing where processing is conducted in the in-transit storage tanks.

Hauled Sewage (Septage) Waste Management System - Land Application Sites ☐ N/A

List the Environmental Compliance Approval Number(s) of all disposal site(s) approved by the Ministry of the Environment and Climate Change for land application of hauled sewage in association with this waste management system.

Instrument Type	Instrument Number	Approval or Application Date (yyyy/mm/dd)

✓ Completion Status (5.5.5 Hauled Sewage (Septage) Waste Management System)

✓ Completion Status (5.5 Waste Management Systems (Except Mobile Waste Processing))

5.6 Waste Management System - Mobile Waste Processing

Note**: If the application is not for the use and operation of mobile waste processing equipment, proceed to Section 5.7

5.6.1 Mobile Waste Management System Process and Equipment Description

Type(s) of Waste to be Processed (select all that apply) *

Subject:

- ☐ Hazardous Waste
☐ Liquid Industrial Waste

Non-subject:

- ☐ Municipal (non-hazardous)
☐ Other Liquid Waste

Type of Waste to be Processed by the Unit(s)	Number of Units *	Financial Assurance (per unit)	Financial Assurance Required
Non-hazardous Solid Waste		\$5,000	
Hazardous Waste		\$20,000	
Liquid Industrial Waste		\$20,000	
Other Liquid Waste		\$20,000	
Multiple Types of Waste from the Categories Above		\$20,000	

Total Financial Assurance

Municipal (non-hazardous) Waste Categories to be Processed (select all that apply) *

- ☐ Contaminated Soil at Cleanup Site ☐ Wood Waste ☐ Construction and Demolition Waste
☐ Asbestos Waste ☐ Tires ☐ Domestic Waste
☐ Other (specify) *

Other Liquid Waste Categories to be Processed (select all that apply) *

- ☐ Hauled Sewage ☐ Waste from Food Processing/Preparation Operations ☐ Processed Organic
☐ Other (specify) *

Hazardous / Liquid Industrial Waste Types to be Processed

Class Code *	Class Code	Class Code	Class Code	Class Code

✓ Completion Status (5.6.1 Mobile Waste Management System Process and Equipment Description)

5.6.2 Equipment Information - Please attach a separate list if more space is required.

Equipment List

Unit No. *	Unit Type *	Process Description *	Equipment Type *	Make *	Model *	Serial Number *	Equipment Capacity (including unit of measurement) *

Separate list attached?

- ☐ Yes ☐ No

✓ Completion Status (5.6.2 Equipment Information)

✓ Completion Status (5.6 Waste Management System - Mobile Waste Processing)

5.7 Cleanup of Contaminated Sites

Note** - If the application is not for a cleanup of a contaminated site please proceed to Section 6.

Type of Cleanup *

- ☐ In-situ ☐ Ex-situ ☐ Both

Contaminated media to be treated: *

☐ Groundwater

☐ Surface water

☐ Sediment

☐ Soil

Waste Type *

Subject:

- ☐ Hazardous Waste
- ☐ Liquid Industrial Waste

Non-subject:

- ☐ Municipal (non-hazardous)
- ☐ Other Liquid Waste

Type of discharge

- ☐ Air
- ☐ Groundwater
- ☐ Storm or sanitary
- ☐ Surface water
- ☐ Noise

☒

 Completion Status (5.7 Cleanup of Contaminated Sites)

6. Supporting Documentation and Technical Requirements

6.1 General

This is a list of supporting information to this application and is subject to the FIPPA and EBR.

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Proof of legal name	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Enhanced EBR description	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Provincial Officer Notice	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Inspection Report	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Detailed project and process description	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Pre-application Consultation Record	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Legal Survey(s)	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Site Plan(s)	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Scaled area location plan(s) with geo-referencing points identified	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Documentation in support of EBR Exception	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Proof of Compliance with EAA Requirements	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Proof of Consultation/Notification	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Financial Assurance Estimate	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Name, address and consent of land/site owner for the installation and operation of the proposed activity or storage location of equipment or vehicle	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Name, address and phone number of the Operating Authority	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy of NEPDA Permit	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy/Proof of Municipal Planning Approval (ORMCA, general)	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Municipal Zoning Confirmation Letter	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Zoning map	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Conservation Authority Clearance	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Director's approval for Policy 2 Deviation	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Application Fee	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
A copy of this application has been sent to the Ministry Local District Office	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>



Completion Status (6.1 General)

6.2 Air

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Emission Summary and Dispersion Modelling (ESDM) Report prepared in accordance with s. 22 and of O. Reg. 419/05 (including signed checklist)	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Electronic copy of the Dispersion Modelling input and output files prepared in accordance with s. 26 of O. Reg. 419/05	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Supporting Information for a Maximum Ground Level Concentration Acceptability Request for Compounds with no Ministry POI Limit - Supplement to Application for Approval, EPA S. 9	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copies of forms requesting O. Reg. 419/05 instruments and supporting documentation	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>



Completion Status (6.2 Air)

6.3 Noise and Vibration

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Primary Noise Screening	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Secondary Noise Screening	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Acoustic Assessment Report including signed checklist (AAR)	Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/>
Vibration Assessment Report	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Noise Abatement Action Plan	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>



Completion Status (6.3 Noise and Vibration)

6.4 Sewage Works

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Signed Municipal Responsibility Agreement	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Detailed description of the proposed activities/works	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Notice of Completion for the Environmental Study Report (ESR)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Design Brief	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Preliminary Engineering Report	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Final Plans	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Engineering Drawings and Specifications	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Sewage quantity and quality characteristics	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Stormwater Management Report	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Stormwater Management Plan	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Hydrogeological Assessment with proof of concurrence from the Ministry's Regional technical support section	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Environmental Impact Analysis	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Final effluent criteria accepted with proof of concurrence from the Ministry's Regional Technical Support Section	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Sewage Works Limited Operational Flexibility Requirements - Engineer's Report	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Sewage Works Limited Operational Flexibility Requirements - Declarations	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Pipe Design Data Form	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>



Completion Status (6.4 Sewage)

6.5 Waste Disposal Sites

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Design and Operations Report	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Stormwater Management Report	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Hydrogeological Assessment with proof of concurrence from the Ministry's Regional technical support section	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Assessment of Physical and Water Use Conditions	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Waste Limited Operational Flexibility Requirements - Engineer's Report	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Waste Limited Operational Flexibility Requirements - Declarations	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy of notification to adjacent landowners	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>



Completion Status (6.5 Waste Disposal Sites)

6.6 Waste Management Systems

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Proof of vehicle and/or equipment ownerships	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Complete Fleet List (list of all vehicles, trailers and equipment used)	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy of the Liability Insurance for all vehicles for which insurance is required	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy of BUC recommendation	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy of the storage tank design	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Copy of commercial vehicle licence	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Description of the physical location where the vehicles transporting biomedical waste are being disinfected	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Drivers Training Manual (for PCB/ Biomedical Waste)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
A copy of the applicant's Operation Plan including detailed packaging and biomedical waste handling methods	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Contingency and Emergency Procedures Plan (for PCB/ Biomedical Waste/Hauled Sewage (Septage))	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>



Completion Status (6.6 Waste Management Systems)

6.7 Mobile Waste Processing ☐ N/A

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Design and Operations Report - Mobile Waste Processing of General Waste	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Design and Operations Report - Mobile Waste Processing of Liquid Waste	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>

✓ Completion Status (6.7 Mobile Waste Processing)

6.8 Cleanup of Contaminated Sites ☐ N/A

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Design Report for Cleanup of Contaminated Sites	N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
Other (please describe)	Optional	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>

✓ Completion Status (6.8 Cleanup of Contaminated Sites)

6.9 Other Attachments ☐ N/A

Title	Reference	Confidential
		<input type="checkbox"/>

Is there an attachment of an additional list of attachments?

☐ Yes ☐ No

If there is not enough space to list all of the attachments included in this application package, please include an additional listing of these attachments.

✓ Completion Status (6.9 Other Attachments)

6.10 Confidentiality

Attachment	Required, Optional or N/A	Attached?	If no, provide explanation, (include referenced attachment if more space is required for rationale)	Confidential
Explanation for confidentiality	Required	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	As per client's request	<input type="checkbox"/>

✓ Completion Status (6.10 Confidentiality)

Please note: The collection of personal information in this application is necessary to administer the Ministry's approvals program, which is authorized pursuant to the *Environmental Protection Act* and the *Ontario Water Resources Act*. The personal information collected in this application will be used to administer the program, including for the purposes of the Ministry's compliance and enforcement activities under the aforementioned acts, and for the purposes of making information in respect of Environmental Compliance Approvals available to the public with the exception of payment information. Questions about the collection of the information can be directed to a Client Service Representative, Client Services and Permissions Branch, 135 St. Clair Avenue West, 1st Floor, Toronto ON M4V 1P5; Telephone outside Toronto 1-800-461-6290 or in Toronto 416-314-8001 or Fax 416-314-8452.

7. Authorization

7.1 Statement of the Applicant

I am authorized to prepare and submit this application and to make this certification. I have reviewed the complete application and I have made all inquiries that are necessary to declare to the best of my knowledge, information and belief:

- The information contained in this application is complete and accurate.
- The Technical Contact(s) identified in this application has/have been authorized to prepare certain technical material, and act on behalf of the applicant to discuss this application with the Ministry of the Environment and Climate Change and to provide additional information about this application to the Ministry on request.
- The information provided to the Technical Contact(s) in relation to this application is complete and accurate.

Name of Signing Authority (Please print) *

David Moide

Title *

Vice President of Business Development and Quarry Operations

Telephone Number

613-880-6204

ext.

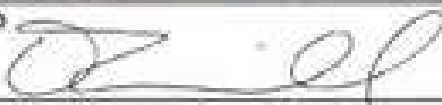
Mobile Number

Fax Number

Email Address

dave@dsgconstruction.com

Signature



Date (yyyy/mm/dd)

2020/03/30

✓ Completion Status (7.1 Statement of the Applicant)

7.2 Statement of the Municipality ☐ N/A

I, the undersigned hereby declare on behalf of the Municipality, that the Municipality has no objection to the construction of the works in the Municipality.

Name (Please print) *

Title *

Name of Municipality *

Signature

Date (yyyy/mm/dd)

✓ Completion Status (7.2 Statement of the Municipality)

7.3 Statement of Technical Contacts

Technical Contact 1

I have been authorized by the applicant to prepare the technical materials for the area(s) of responsibility identified in section 2.6 that are included in the application. I have reviewed those technical materials and I have made all inquiries that are necessary to declare to the best of my knowledge, information and belief:

- The technical materials contained in this application in respect of the area(s) of responsibility identified in section 2.6 are complete and accurate.
- I have the relevant education and experience necessary to provide this certification.

Name of Technical Contact (Please print) *

Megan Ostronic, M.A.Sc., P.Eng.

Signature



Date (yyyy/mm/dd)

2020/03/31

Technical Contact 2

I have been authorized by the applicant to prepare the technical materials for the area(s) of responsibility identified in section 2.6 that are included in the application. I have reviewed those technical materials and I have made all inquiries that are necessary to declare to the best of my knowledge, information and belief:

- The technical materials contained in this application in respect of the area(s) of responsibility identified in section 2.6 are complete and accurate.
- I have the relevant education and experience necessary to provide this certification.

Name of Technical Contact (Please print) *	
Swetha Kulandaivelan, EIT	
Signature	Date (yyyy/mm/dd)
	2020/04/30

✓ Completion Status (7.3 Statement of Technical Contacts)

8. Payment Information - Application for an Environmental Compliance Approval

Please Note:

1. If this form has been completed by hand, the fee calculations must be completed and attached separately. The supplemental fee calculations do not need to be included if this form has been completed electronically.
2. If this form has been completed electronically, the fees for this application have been calculated based on the information provided. The Ministry may require additional information during the review of the application that could impact the total fee required.
3. All fees should be paid in Canadian funds, payable to the *Minister of Finance*, except fees for *Transfer of Review*, which are payable to the local municipality.
4. Credit card payments are accepted for payments under \$10,000 only. **Never email credit card information.**
5. If payment is being made by certified cheque or money order, please staple the payment to this page.
6. The information collected in this section of the form is considered confidential and will only be used to process the application fee.
7. To protect credit card information, do not submit this page containing payment information via e-mail or any other electronic means if it includes credit card information. Credit card information should be submitted only by mail, facsimile, or hand-delivery. Applications containing payment information that are submitted via e-mail or any other electronic means will not be processed and will be destroyed.

Do not include this page in the copies of the application that are being provided to the Local Ministry District Office.

Amount Enclosed

6,700

Method of Payment *

☐ Certified Cheque ☐ Money Order ☐ VISA ☐ MasterCard

Credit Card Information (if paying by VISA or MasterCard)

Name of Cardholder (Please print)

Card Number

Expiry Date (mm/yy)

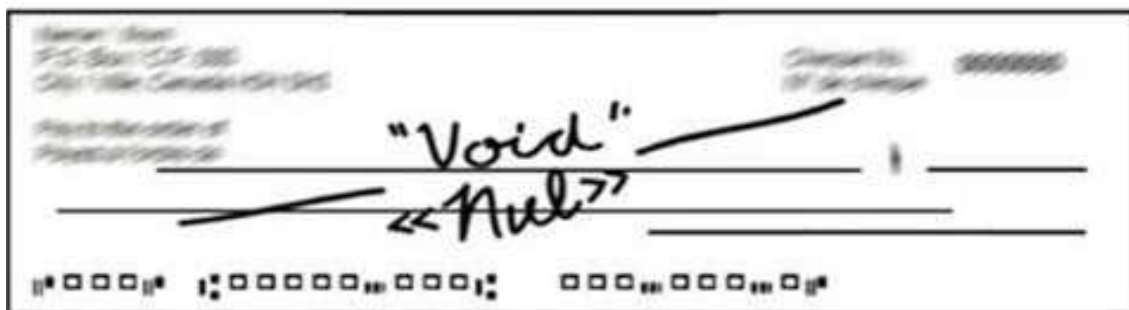
Card Holder's Signature

Date (yyyy/mm/dd)



Completion Status (8 Payment Information)

If paying by certified cheque or money order, please attach it here.



Application Summary

For Office Use Only

Reference Number	Payment Received (\$)	Date (yyyy/mm/dd)	Initials

Applicant Name

Ottawa D-Squared Construction Limited

Project Name

1350-01.01

Project Description Executive Summary

Ottawa D-Squared Construction Limited (D-Squared) wishes to apply for an Environmental Compliance Approval (Air & Noise) for their proposed hot-mix asphalt (HMA) plant with an aggregate depot.

The identified emissions from the HMA plant will be i) particulate, generated as a result of the handling and processing of aggregate materials; ii) particulate, polyaromatic hydrocarbons (assessed as benzo(a)pyrene [B(a)P]), benzene, and naphthalene, generated as a result of the delivery, storage, and use of asphalt cement; iii) particulate, polyaromatic hydrocarbons (assessed as B(a)P), benzene, naphthalene, and carbon monoxide generated as a result of the storage and transfer of HMA product; iv) particulate, nitrogen oxides, sulphur dioxide, carbon monoxide, polyaromatic hydrocarbons (assessed as B(a)P), benzene, naphthalene, arsenic, lead and nickel from the natural gas or no. 2 oil-fired dryer; and v) particulate, nitrogen oxides, sulphur dioxide, and carbon monoxide from the natural gas or no. 2 oil-fired hot-oil heater servicing the AC storage tanks.

The identified emissions from the aggregate depot will be i) particulate generated as a result of the handling and transfer of aggregate materials; and ii) respirable crystalline silica (RCS) (PM10) (quartz) generated as a result of the handling and transfer of RC.

Ontario Regulation 1/17 (O.Reg. 1/17) Schedule identifies high-risk or complex facilities which are ineligible for the Air Emissions EASR, based on their NAICS code. Since asphalt paving mixture and block manufacturing (NAICS code 324121) is included in this list, all of the facility's activities and equipment, must be approved under an ECA (Air and Noise).

Supplemental Application Information

One copy of the application and supporting documentation has been mailed to the District Manager at the Ministry of the Environment, Conservation and Parks (MECP) Ottawa District Office. One hard copy and one electronic copy of this application have been provided to the Client Services and Permissions Branch.

Application Status

Section	Completed?			
1. Application Information	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
2. Project Information	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
3. Regulatory Requirements	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
4. Site Information	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
5. Facility Information	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
6. Supporting Documentation	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No
7. Payment Information	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
8. Authorization	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

Fee Summary

Activity	Amount (\$)
Administrative Processing	\$200.00
Review of EPA s. 9 activities	\$6,500.00
Review of EPA s. 27 activities	\$0.00
Review of OWRA s. 53 activities	\$0.00
Total Fee	\$6,700.00

The Ministry may request additional fees upon review of this application.

If this form is submitted in print version only and the smart calculation feature is not used, please attach the fee calculation separately.