Report

ORTECH Environmental
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Air Quality Assessment of TTC LRV Sheppard Avenue East Site

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EXECUTIVE SUMMARY

ORTECH Environmental (ORTECH) was retained to assess the potential environmental air quality effects of the proposed TTC LRV garage at the Sheppard Avenue East site, east of Morningside Avenue and Sheppard Avenue East.

The existing air quality was determined to be good and there are no local facilities air emissions that should constrain the proposed LRV garage.

The air emissions from the facility construction and operation were considered negligible with negligible net effects on air quality.

1. INTRODUCTION

ORTECH Environmental (ORTECH) was retained to assess the potential environmental air quality effects of the proposed TTC LRV garage at the Sheppard Avenue East site, east of Morningside Avenue and Sheppard Avenue East.

The existing air quality was evaluated by assessing air quality as monitored at one Ontario Ministry of the Environment (MOE) stations and reviewing industrial facilities within a 1000 metres distance from the site air emission potential.

The air emissions from the facility constructions and operation were determined, mitigative measures identified and the net air quality effects assessed.

2. INVENTORY OF EXISTING AIR QUALITY

2.1 Study Area

The air quality inventory of existing conditions addresses both regional air quality, as monitored by the Ministry of the Environment (MOE), and local air emission sources within 1000 metres of the Sheppard Avenue East Site.

Air quality data was assessed based on monitored data from the MOE station that best represents the study area: the Toronto East AQ Station at Kennedy Rd. and Lawrence Avenue East.

The 1000 metre local air quality area was selected based on the MOE Land Use Compatibility Guidelines. These guidelines define industrial classes based on their air quality impact potential and recommend potential impact influence areas. The recommended potential influence area for the industrial class with the most potential to impact air quality is 1000 metres. The minimum separation distance for these industries is 300 metres.

Figure 1 illustrates distances of approximately 300 metres and the local 1000 metre study area perimeter from the boundaries of the Sheppard Avenue East Site.

Figure 1: Sheppard Avenue East Site Study Area

2.2 Air Quality Inventory

The air quality inventory considered both regional air quality data as well as individual local sources of air emissions that have the potential of impacting air quality.

2.2.1 Methodology

Regional air quality data from the MOE Air Quality monitoring station that best represents the study area was used to establish existing regional air quality for the site.

The MOE currently operate a total of four instrumented air quality monitoring stations across the City of Toronto. The Toronto East station is located approximately 9 km from the Sheppard Avenue East site. The other sites are further away and not considered representative of the study area. Historical data for the two parameters that are most typically related to human health effects, namely fine particulate ($PM_{2.5}$) and oxides of nitrogen (NO_X reported as NO_2), was assessed for the period from January 1, 2004 through December 31, 2008.

The local 1000 m impact study area for the air quality inventory was surveyed for potential sources of dust, odour, fine particulate, VOCs and other criteria air contaminants that have the potential to impact air quality.

2.2.2 Findings

2.2.2.1 Desk Top Review Findings

The air quality data for $PM_{2.5}$ and NO_X from the Toronto East station is summarized in Table 1 by providing the cumulative percent of the time that measured concentrations of contaminants meet Air Quality Indices (AQI) as defined by the MOE. These AQI values range from Very Good through Good through Moderate through Poor to Very Poor.

For $PM_{2.5}$ the AQI was "Very Good" at least 76% of the time; "Good" at least 90% of the time; and "Moderate" at least 99.0% of the time. The worst annual Index rating for $PM_{2.5}$ recorded was "Poor" and occurred less than 0.5% of the time.

The AQI for NO_X was "Very Good" at least 97% of the time and "Good" 100% of the time.

Based on the air quality monitoring information, the Air Quality within the study area is good to very good at least 76% of the time but is occasionally moderate to poor.

Table 1: Ambient Air Quality Monitoring Summary

Year	Cumulative Frequency $PM_{2.5}$			Cumulative Frequency NO_2	
	Very Good	Good	Moderate	Very Good	Good
East Toronto					
2004	80%	93%	99.6%	98%	100.0%
2005	76%	90%	99.0%	97%	100.0%
2006	80%	94%	99.7%	99%	100.0%
2007	80%	93%	99.4%	99%	100.0%
2008	83%	96%	100.0%	99%	100.0%
Average	80%	93%	99.5%	98%	100.0%

2.2.2.2 Local Impact Area Survey Findings

The local impact study area within 1000 metres of the site consists of retail and commercial facilities to the south and a mix of small industrial and commercial to the west. Resdidential and recreational (Metro Zoo) land uses are to the east and north. Facilities catalogued during the survey of the study area are detailed below:

Coretec Inc., a manufacture of printed circuit boards, is located 350 metres to the west. Coretec has reported to the National Pollutant Release Inventory (NPRI) off-site disposal of copper and sulphuric acid wastes, however, no releases to the air were reported. No air quality issues were identified for this facility.

The Scarborough Transfer & Recovery Centre, located on Thornmount Drive 100 metres west of the site, is used for the consolidation and short term storage of materials collected as part of the Toronto recycling initiative and has some potential for odour and dust.

Approximately 300 metres south of the site is an area with automotive dealerships that have maintenance repair garages and auto-body shops. There is a potential of odour and volatile organic compound emissions from the paint spray booths, but no other air quality issues were identified for these sites.

There are various distribution and storage facilities in the industrial area 300 m to the west. These facilities have significant truck traffic associated with them, which is a potential source of vehicle tailpipe emissions and dust.

Metro Toronto Transportation Services Winter Maintenance Depot #8 is located immediately to the west of the Sheppard Avenue East site. This facility has the potential for vehicle emissions and dust.

Located 60 metres to the east on Sheppard Avenue East is Fire Station #212. No air quality issues were identified for this facility.

The remaining facilities in the area are considered to have no air quality issues associated with them. These include several electronic equipment manufactures; several production equipment manufactures; retail outlets; small manufactures; and office buildings.

2.3 Summary of Local Industry Air Quality

In summary, there are a number of facilities within 1000 m of the proposed facility with some potential to emit air contaminants but none that should constrain the proposed development.

3. EFFECTS ASSESSMENT OF THE PREFERRED SITE OPTION

3.1 Air Quality

3.1.1 Potential Effects

During *construction* of the facility, there will be a potential for nuisance dust at the construction site, however, this can and will be mitigated. Sources of dust would include material handling and construction site track-out onto the public roads

During *operation*, there will be several servicing and maintenance activities at the LFRV site which have the potential for emissions to the atmosphere. These activities include washing and cleaning services, compressed air blow-down, body repairs and vehicle painting and maintenance welding. The washing activities will be with water-based cleansers, which are generally considered insignificant sources of contaminants. The compressed air cleaning of the traction motors and selected roof-mounted components will generate dust emissions. The body repair activities will include minor collision repairs, panel replacements, door and window replacements and other system parts replacements. The parts replacements will not result in emissions but the minor collision repairs will generate insignificant releases of dust from body work repair work. Vehicle repainting for either touch-up painting of collision repairs or complete vehicle repainting will generate releases of paint solvents and paint overspray particulate. Maintenance welding will generate fumes containing particulate and metals.

In addition to the servicing and maintenance activities, there will be emissions from the combustion of natural gas used for comfort heating in the building.

Vehicle tailpipe emissions will also be present from the employee vehicles entering and leaving the site employee parking lot. A total of 350 employees, over 3 shifts per day, could use the site parking lot.

3.1.2 Mitigation Measures

A dust control program during *construction* would include dust suppression (water), road sweeping, and cleaning of vehicle tires before leaving the construction site to control track-out.

During *operation* of the facility, particulate generated from the compressed air cleaning will be controlled with a ventilation/dust capture and control system. Painting will be conducted inside the spray paint booth which will contain the emissions and will be equipped with an exhaust system with overspray filters and an exhaust stack. Welding stations will have fume capture and control systems. Energy conservation measures will be incorporated into the design and operation of the facility in order to reduce energy requirements and resultant combustion gas emissions.

3.1.3 Net Effects

During *construction,* the net impact on air quality will be local to the construction areas and should be negligible.

The MOE procedure for preparing air emissions applications outlines a methodology to assess whether sources are significant or negligible sources of air contaminants. A list of sources considered negligible includes minor surface coating operations, maintenance welding stations and natural gas fired heating units with capacities of less than 20 million kilojoules per hour. The facility building, designed with conventional energy conservation measures, would not exceed 20 million kilojoules per hour. Based on this, the *operation* of the touch-up painting of minor collision repairs, the maintenance welding and the heating of the building would be considered negligible sources of air contaminants with negligible net effects on air quality.

The compressed air blow-down and the paint booth would be intermittent controlled sources of air contaminants with negligible net effects on air quality.

The effects of the employee vehicle tailpipe emissions will be insignificant in comparison to the traffic emissions on the surrounding public roads, specifically Sheppard Avenue East to the south of the site. Employee vehicles represent a maximum of 350 vehicles per day, while the average weekday traffic count on Sheppard Avenue East is approximately 17,500 vehicles per day.

4. MONITORING

The Ontario Ministry of the Environment certificate of approval for air emissions for the facility will include conditions which will require documentation of operating and maintenance procedures, including measures to minimize air emissions. The certificate will also include a condition to record and document environmental complaints. An environmental management and monitoring system involving observations of potential emissions during both construction and operation will be implemented to ensure these conditions are met and air emissions controlled. As a consequence, monitoring of the air emissions or the ambient air surrounding the facility is not planned.