

Fraser Surrey Docks Air Quality Assessment Summary

Introduction

- Fraser Surrey Docks (FSD) retained Levelton Consultants Ltd. to conduct an air quality assessment for the proposed Direct Transfer Coal Facility. FSD is seeking PMV approval for project construction and is applying for an Air Quality Emissions Permit from Metro Vancouver.
- The assessment considers the emission sources related to the proposed coal operations, and the current emission sources from FSD's agricultural operations (dry bulk).
- A detailed air dispersion modelling plan was developed through consultation with PMV and Metro Vancouver, which forms the basis for the air quality assessment.

Scope of Air Quality Assessment

- Primary objectives include:
 - Identify expected air emissions from terminal operations and the Port Authority Rail Yard (PARY)
 - Characterize baseline ambient air quality (5 years of data from three Metro Vancouver monitoring stations based on ambient air quality objectives) using methodology consistent with the *Guidelines for Air Quality Dispersion Modelling in British Columbia* (AQM) and which has been accepted by regulatory agencies in other air quality assessments
 - Conduct an air dispersion modelling assessment
 - Identify processes that could reduce air emissions and improve /maintain air quality
- Assessed emission points include:
 - Proposed coal operations:
 - Locomotive exhaust emissions
 - Tugboat exhaust emissions
 - Material Transfer Points – fugitive dust
 - Coal unloading (rail) and loading (barge) – fugitive dust
 - Rail (in PARY and near the facility) and barges (at berth and near the facility) – fugitive dust
 - Existing agricultural operations:
 - Baghouses/cyclones – fugitive dust and exhaust emissions
 - Material transfer points – fugitive dust
 - Ship loading (barge) – fugitive dust
 - In-transit
 - Combustion and fugitive dust emissions from rail transport in the Lower Fraser Valley and barges on the Fraser River

Criteria Air Contaminants (CAC)

- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO₂)
- Sulphur Dioxide (SO₂)
- Particulate Matter:
 - Particulate matter less than 10 microns in equivalent diameter (PM10)
 - Particulate matter less than 2.5 microns in equivalent diameter (PM2.5)
 - Total particulate matter
- Dustfall
- Volatile Organic Carbons

Air Dispersion Modelling

- Air dispersion modelling was conducted following the methods recommended in the AQMG in addition to guidance from PMV and Metro Vancouver.
- The CALPUFF modelling suite – a suite of numerical models (CALMET, CALPUFF, and CALPOST) that are used in series to determine the impact of emissions in the vicinity of a source or group of sources – was used for this analysis
- This was augmented by data in the US EPA’s Human Health Risk Assessment Protocol of Hazardous Waste Combustion and Volume II of the Industrial Source Complex User’s Guide
- The following parameters were used for air dispersion modelling from the emission points noted on the previous page:
 - 1-hour averaging period
 - 24-hour averaging period
 - Annual averaging period
- The total annual tonnages for all emissions sources from both coal and agricultural goods handling – broken down by each emission source and CAC – was also calculated

Conclusion

- Based on the air quality modelling assessment, the following conclusions have been drawn regarding their combined potential impact:
 - Predicted air quality impacts at sensitive receptors and within residential neighbourhoods in the vicinity of FSD with the ambient background added are generally low and remain below all Ambient Air Quality Objectives (AAQO).
 - Predicted air quality impacts at receptors adjacent to the in-transit study areas with the ambient background added are generally low and remain below all AAQOs.
 - Agricultural and proposed coal handling operations combined with ambient background concentrations are predicted to result in annual NO₂ emissions exceeding AAQO in an area located immediately west of the FSD fence line, over the Fraser River. This is an area where the tugs and vessels operate and public access is generally limited or controlled due to terminal marine operations. However, while the modelling results are likely to be conservative by nature, ambient air quality monitoring is recommended to validate that air quality exceedences will not occur.

- The majority of the maximum predicted modelled concentrations are located on the facility fence line. The exception is the maximum 8-hour rolling CO concentration, located slightly beyond the west side of the fence line.
- The predicted air contaminant concentrations quickly diminish as emissions disperse further away from FSD's facility or the in-transit emission sources.
- The planned project mitigation measures which have been incorporated into the assessment will assist in the management and mitigation of combustion and fugitive dust emissions from the project and agricultural goods operations.

Full Report

A full copy of the AQA can be found at <http://www.fsd.bc.ca/index.php/company/community-outreach/>