REPORT

METRO VANCOUVER QUATERLY AIR PERMIT REPORTING

Neptune Bulk Terminal Ltd

Prepared for:

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1001 Low Level Road
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Envirochem Project No.: 8005-25

Reporting Period: 2025 – Q3

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1.0 BACKGROUND

To meet Metro Vancouver Air Permit GVA0081 (issued September 23rd, 2016) requirements, Neptune Bulk Terminals Ltd. (Neptune) has implemented a procedure for periodic permit reporting requirements to Metro Vancouver including this quarterly reporting.

Fulfilling these requirements requires processing and checking large amounts of data. The procedures in this report provide an efficient means of processing large amounts of data and ensuring that all calculations and outputs generated are completed accurately. In order to increase the efficiency of this process, Neptune has implemented a data management system which allows for uploading of data to the Neptune database and generation of outputs. Envirochem Services Inc. (Envirochem) has been retained to calculate, tabulate and report these requirements to Metro Vancouver and ensure that:

- Raw data being collected and used for generating outputs is valid,
- Correct methodologies are used to generate these outputs, and
- Any outputs being generated undergo quality assurance/quality control (QA/QC) before being submitted electronically to Metro Vancouver.

All of the procedures contained within this report detail methodologies in conformance with Section 3 Schedules A and B of the current version of the permit (September 23rd, 2016).

This report includes quarterly particulate matter monitoring reporting requirements.

2.0 QUARTERLY REPORTING

2.1 ON-SITE $PM_{2.5}$ AND PM_{10} MONITORING – 24 HR ROLLING AVERAGES

2.1.1 METHODOLOGY

Neptune is conducting continuous $PM_{2.5}$ and PM_{10} monitoring using two Met-One E-BAM Plus monitors on-site near the northwest boundary of Neptune Terminals on the roof of the terminal's electrical substation building.

Ambient Air Monitoring data for $PM_{2.5}$ and PM_{10} are stored in Neptune's database. These data are retrieved and verified by Envirochem. QA/QC is performed on the raw data and any invalid data are flagged. Neptune's data management system is then updated accordingly.

2.1.2 RESULTS

Using Neptune's data management system, Envirochem:

- Converts the vetted $PM_{2.5}$ and PM_{10} data to 24-hour rolling averages and performs QA/QC;
- On a quarterly basis, submits the graphs (**Figure 1** and **Figure 2**) to Metro Vancouver.

During Quarter 3 of 2025, there were some exceedances of the 24-hour $PM_{2.5}$ and PM_{10} AAQO at Neptune's on-site monitor (electrical substation, presented in **Figure 2**) which corresponded to elevated ambient particulate levels in the entire region. It should be noted that Metro Vancouver Air Quality Advisories were in place from August 24th to August 25th for high concentrations of ground-level ozone (smog) and from September 3rd to September 6th for high concentrations of fine particulate matter due to wildfire smoke in the region.

There were also a few 24-hour PM_{10} AAQO exceedances at Neptune's on-site monitor (electrical substation) outside of Metro Vancouver Air Quality Advisory periods. To investigate the attributable particulate for exceedances of the 24-hour PM_{10} AAQO outside of Metro Vancouver Air Quality Advisory periods:

- If Metro Vancouver Air Quality Advisories were issued during the reporting period, the advisories were reviewed and if relevant those dates were excluded from the next analysis steps (no air quality advisory periods were issued in Q3 2025),
- Wind speed and direction during hours with PM_{10} concentrations where the hourly average concentration was at or above the 24-hour AAQO level of 50 µg/m^3 were analyzed (**Figure 3**).

Results and findings are summarized below.

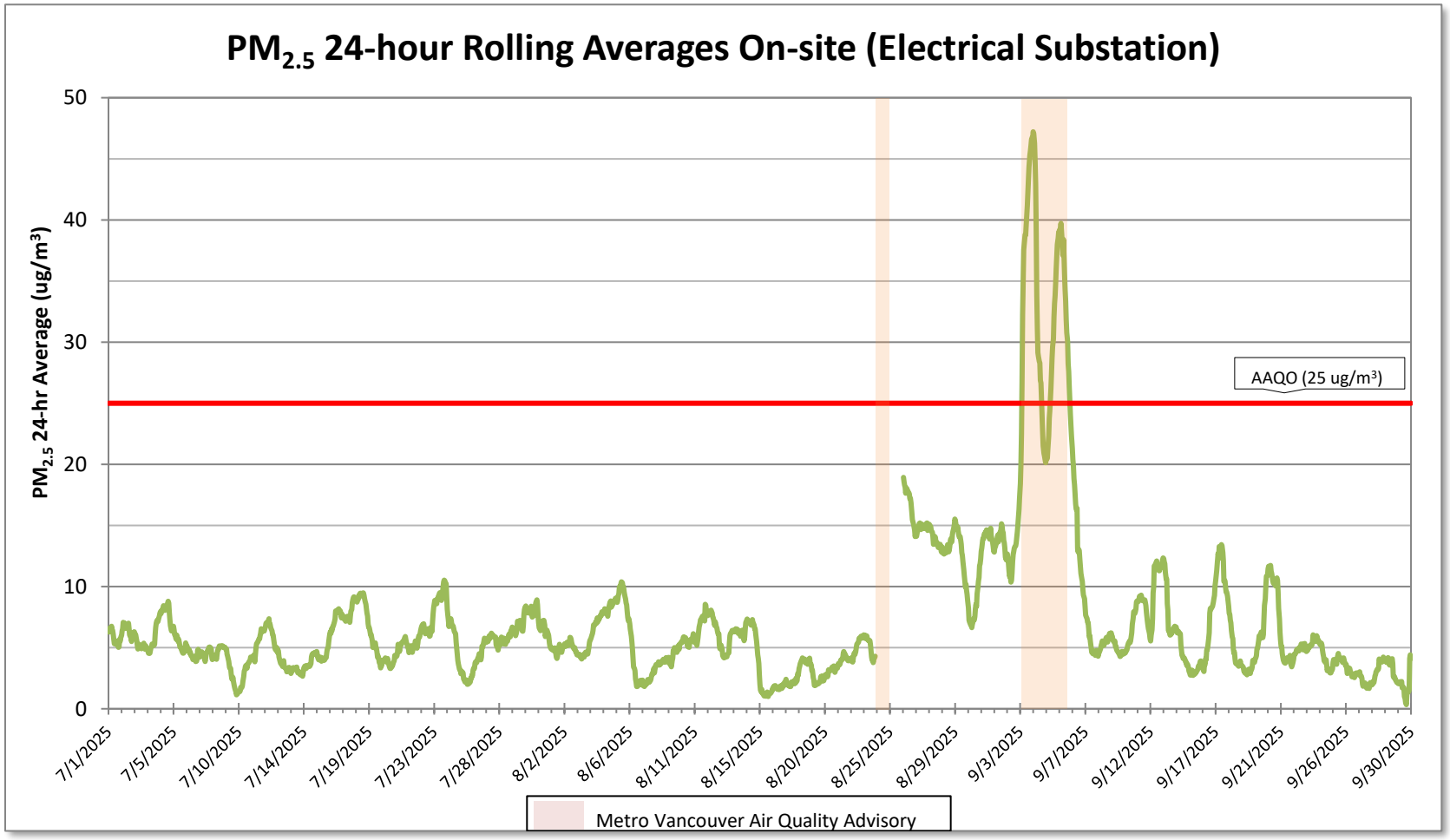

Figure 1: 24-hour rolling averages of $PM_{2.5}$ data from on-site monitor for the third calendar quarter 2025 (July 1st to September 30th, 2025)

Note 1: *Blank space indicates that no data is available due to power failure or instrument maintenance.*
Note 2: *Highlighted periods indicate dates where Metro Vancouver Air Quality Advisories were in effect.*

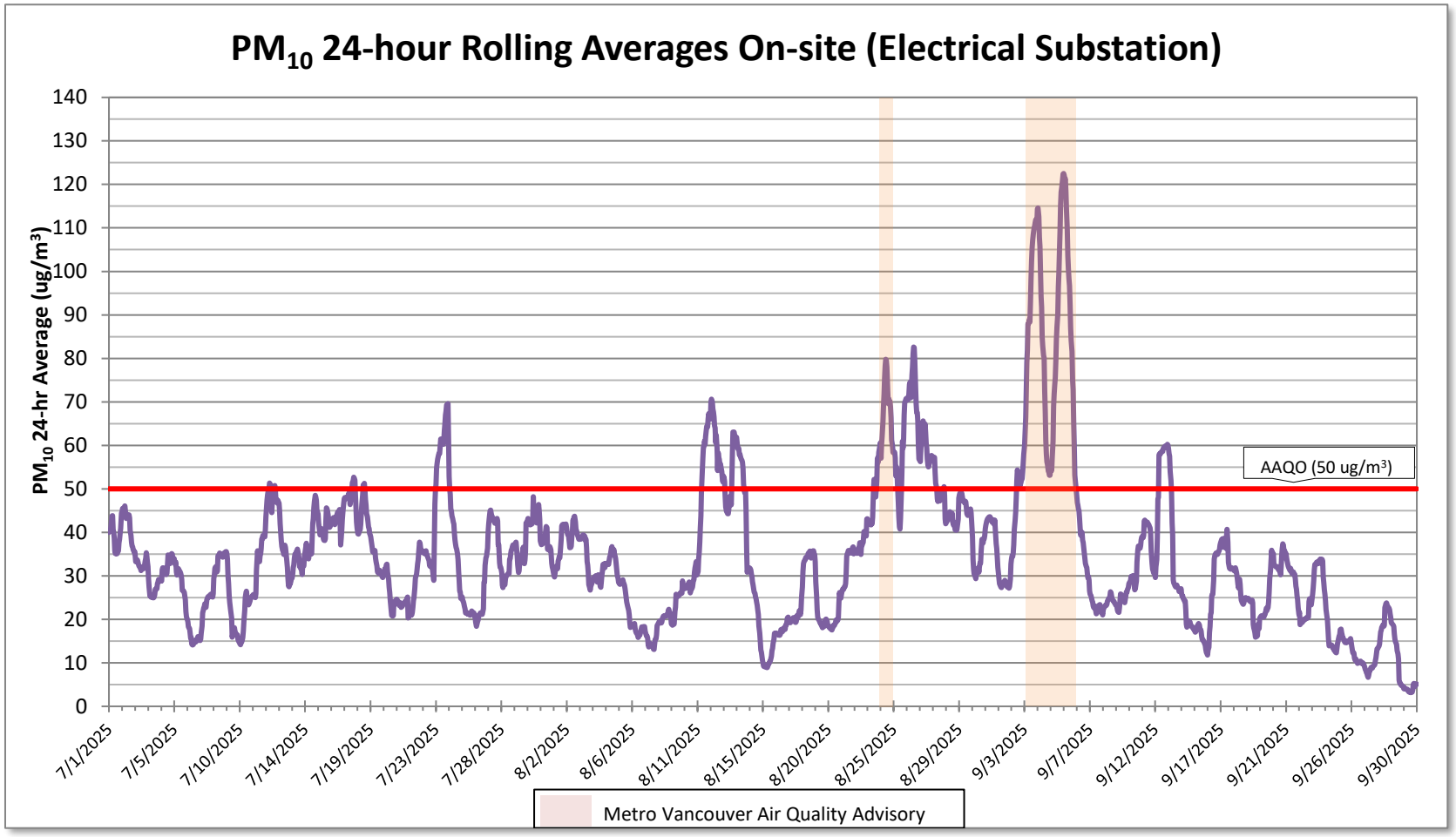

Figure 2: 24-hour rolling averages of PM_{10} data from on-site monitor for the third calendar quarter 2025 (July 1st to September 30th, 2025)

Note 1: *Blank space indicates that no data is available due to power failure or instrument maintenance.*

Note 2: *Highlighted periods indicate dates where Metro Vancouver Air Quality Advisories were in effect.*

2.1.3 WIND ANALYSIS

To investigate the attributable particulate to the observed PM_{10} exceedances, wind speed and direction during hours of those events with hourly average PM_{10} concentrations of 50 µg/m^3 or greater were analyzed. 50 µg/m^3 was conservatively chosen as it is the 24-hour AAQO for PM_{10}. Hence, hours with 50 µg/m^3 PM_{10} or above were considered to have a possible contribution to the AAQO exceedances. If applicable, hours during periods where Metro Vancouver Air Quality Advisories for fine particulate were in place are not considered. As can be seen in **Figure 3**, during hours with 50 µg/m^3 of PM_{10} or higher, the most frequent wind direction was blowing from the west.

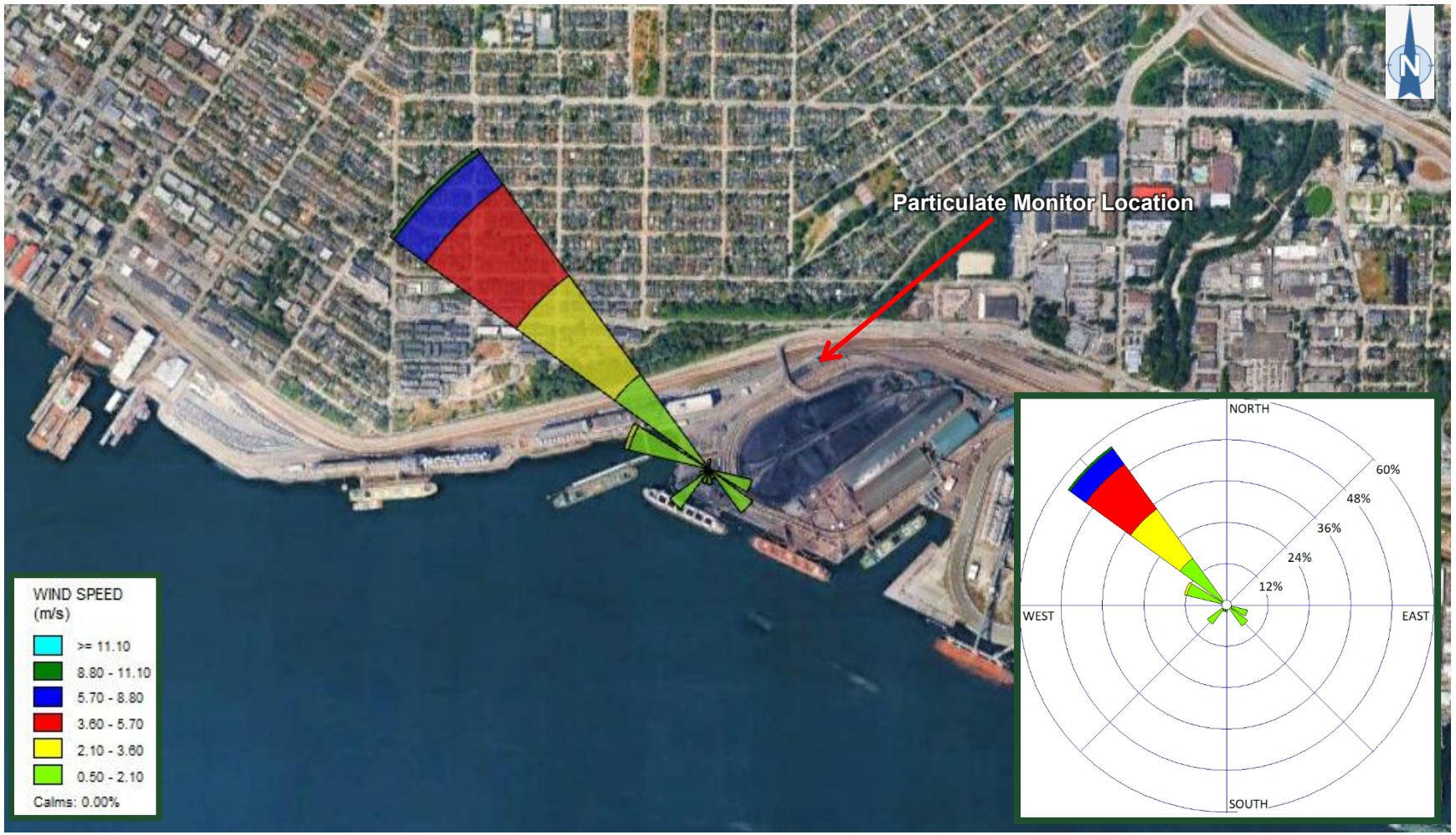

Figure 3: Wind rose during hours contributing to PM_{10} 24-hr rolling average AAQO exceedances with PM_{10} concentrations greater than 50 µg/m^3 in the third calendar quarter 2025 (July 1st to September 30th, 2025)

Note: *The presented wind rose is based on "direction winds blowing from"*

2.2 OFF-SITE $PM_{2.5}$ AND PM_{10} MONITORING – 24 HR ROLLING EXCEEDANCES OF $PM_{2.5}$ AND PM_{10} FROM AAQO

2.2.1 METHODOLOGY

Neptune is conducting continuous $PM_{2.5}$ and PM_{10} monitoring off-site from the terminal at these two locations (in the neighbouring areas):

- To the northeast of the Neptune Terminals, on the roof of 340 Brooksbank Avenue (Neptune's office) equipped with a PM_{10} monitor (Met One E-BAM Plus) and a $PM_{2.5}$ monitor (SHARP 5030i).
- To the northwest of the Neptune Terminals in the residential area at 618 2nd Street East using two pole mounted $PM_{2.5}$ and PM_{10} monitors (Met One E-BAM Plus). *(Note that this location was non-operational during this period due to construction, demolition, and electrical supply issue. This was communicated to Metro Vancouver and a relocation plan has been submitted pending approval.*

Ambient Air Monitoring data for $PM_{2.5}$ and PM_{10} is stored in Neptune's database. These data are retrieved and verified by Envirochem. QA/QC is performed on the raw data and any invalid data are flagged. Neptune's data management system is then updated accordingly.

2.2.2 RESULTS

Using Neptune's data management system, Envirochem:

- Converts the vetted $PM_{2.5}$ and PM_{10} data to 24-hour rolling averages;
- Retrieves the quarterly 24-hour rolling averages from Neptune's database;
- Identifies and flags any 24-hour rolling averages which exceed Metro Vancouver Ambient Air Quality Objectives (AAQOs) for $PM_{2.5}$ and PM_{10};
- On a quarterly basis, tabulates all exceedances (**Table 1**) and submits them to Metro Vancouver.

Table 1: Off-Site 24-hour rolling average $PM_{2.5}$ and PM_{10} AAQO exceedances for the third quarter (July 1st to September 30th, 2025)

METRO VANCOUVER PERMIT GVA 0081	
Neptune Bulk Terminals (Canada) Ltd.	
OFF-SITE 24-HR ROLLING AVERAGE $PM_{2.5}$ AND PM_{10} AAQO EXCEEDANCES	
Reporting Period:	**July 1st to September 30th, 2025**

Exceedance Event	MV AAQO		Neptune Office (340 Brooksbank Ave)	Neighbourhood Pole (618 E 2nd St.)	Possible Cause
	Contaminant	µg/m³	Period of Exceedance		
1	$PM_{2.5}$	25	No exceedances	(a)	N/A
	PM_{10}	50	19:00 August 24th – 13:00 August 25th 15:00 August 26th – 21:00 August 26th	(a)	Hot and sunny weather (MV Air Quality Advisory)
2	$PM_{2.5}$	25	13:00 September 3rd – 14:00 September 4th	(a)	N/A
	PM_{10}	50	13:00 September 3rd – 14:00 September 4th	(a)	Wildfire Smoke (MV Air Quality Advisory)

Note: *AAQOs are based on 24-hour rolling averages. For hours presented above, periods are representative of the previous 24 hours.*

(a): *The $PM_{2.5}$ and PM_{10} units at Neighbourhood Pole (618 E 2nd St) were non-operational during this period due to construction, demolition, and electrical supply issue. This was communicated to Metro Vancouver and relocation plan has been submitted pending approval.*