

*Parks and Environment Department
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October 30, 2023

File: AQ-10-01-1202

Tracey Arthur, Director of Corporate Administration
City of White Rock
15322 Buena Vista Avenue
White Rock, B.C. V4B 1Y6
VIA EMAIL: ClerksOffice@whiterockcity.ca

Dear Tracey Arthur:

Responses to requests regarding 2023-08-31 Air Quality Permit Application from Semiahmoo RNG GP Corp-1202

Thank you for your letter dated October 18, 2023 in which the City of White Council had three requests for information related to an application by Semiahmoo RNG GP Corp. for an air quality permit under the *Greater Vancouver Regional District Air Quality Management Bylaw 1082, 2008* (the Bylaw) for a proposed organics processing and renewable natural gas facility on Semiahmoo First Nations land. This letter provides responses to those three requests, which were:

- 1. Metro Vancouver thoroughly investigate and advise the City of the potential for odours from the proposed Andion biogas facility being carried by prevailing winds to White Rock and negatively affecting quality of life of White Rock residents and,*
- 2. Metro Vancouver thoroughly investigate and advise the City of the potential for gases emitted or wastewater effluents or discharge from the proposed Andion biogas facility being carried by prevailing winds to White Rock and negatively affecting the health of White Rock residents and,*
- 3. Metro Vancouver advise what regulatory tools it has available should design deficiencies, production challenges or poor feedstock management result in emissions of malodourous or unhealthy gases or wastewater effluents or discharge.*

1. The potential for odours to negatively affect quality of life of White Rock residents

Refined dispersion modelling for the proposed facility was submitted with the Semiahmoo RNG GP Corp. air permit application and included predictions of odour impacts in the surrounding community. The full dispersion modelling report is available [here](#) at the Canadian Impact Assessment Registry page for the project (bottom, under 'Key Documents'). The executive summary of the report as well as figures and tables referenced below are attached for convenience. Metro Vancouver staff with years of experience running and interpreting the results of dispersion models, reviewed and approved the dispersion model plan that was used as the basis for the

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report, in accordance with Metro Vancouver's requirements. Metro Vancouver staff also reviewed and commented on draft and final reports.

Odour was predicted for two averaging periods (4 and 10 minutes) and compared to criteria from three jurisdictions (see Table 5-2). None of the predicted odour concentrations extend into the City of White Rock (see Figures 5.18 to 5.21). Exceedances of odour criteria were predicted at the Hills at Portal Golf Club, Peace Arch Duty Free and less frequently at Peace Arch Provincial Park. These exceedances were predicted mostly in the fall/winter and at night when people are less likely to be outside. The potential for nuisance odour was predicted at some residences in South Surrey east of 164th St and west of 174th St (see Figure 5.22).

2. The potential for gases or wastewater to negatively affect the health of White Rock residents

The air contaminants listed in the Environmental Protection Notice (available [here](#)) with the potential to affect human health or cause odour were also modelled. These included nitrogen dioxide, sulphur dioxide, ammonia, hydrogen sulphide, and various volatile organic compounds. No exceedances of Metro Vancouver's ambient objectives or criteria from other jurisdictions were predicted at sensitive receptors such as residences, businesses, schools, senior facilities, and health care facilities (see Table 6-1).

Metro Vancouver staff are not health experts and we rely on the expertise of the health authorities, who we ask to comment on all applications for new air quality permits. The Fraser Health Authority was asked to review and comment on the Semiahmoo RNG GP Corp. application and dispersion modelling report. Fraser Health's review was limited to potential air quality and health impacts and did not include review of potential impacts of wastewater discharge to the environment or health (see attached letter). They commented that air quality objectives/criteria are not predicted to be exceeded at sensitive receptor sites although hydrogen sulphide concentrations are predicted to approach or meet criterion values approximately 5 times per year at the property fence line and/or at a particular area of the golf course (hole 2). They also summarized the predicted odour concentrations and stated that there are likely no significant health hazards, but odour may be a nuisance. They suggested that Metro Vancouver review the results of air quality sampling that has been proposed by the facility once in operation to ensure that emission concentrations are not substantially different from those in the dispersion model, particularly for H₂S, and if they are, that additional mitigation measures be considered and implemented.

With respect to wastewater effluents or discharge, the applicant intends to discharge wastewater to sewer and they have applied for a Greater Vancouver Sewerage & Drainage District liquid waste permit. Therefore, there are no expected impacts to White Rock residents.

3. Regulatory tools available to Metro Vancouver

The Bylaw authorizes the District Director to issue a permit to allow the discharge of an air contaminant subject to requirements they consider advisable for the protection of the environment, such as:

- limits and restrictions on the quantity and frequency of air contaminant emissions;
- addition, alteration, removal, or improvement to control works;

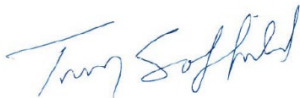
- submission and adherence to odour management and complaint response plans;
- sampling and monitoring of air contaminants; and
- conducting studies, keeping records, and reporting information.

Metro Vancouver Officers conduct inspections of permitted facilities to assess compliance with the permit and the Bylaw. Should contraventions be noted, we may take enforcement action against the permit holder. Our enforcement tools include [Notice of Bylaw Violation](#), [Municipal Ticket Information](#) and long-form prosecution.

Should a facility be in compliance with its permit but design deficiencies, production challenges or poor feedstock management result in unacceptable air quality impacts, and it becomes necessary for the protection of the environment, the District Director can amend the permit to delete, change or impose any procedure or requirement that could have been imposed when the permit was first issued.

I hope these responses adequately address your inquiries. If you have any questions or would like to arrange a meeting with our technical team to provide a more detailed explanation of the dispersion modelling report, please contact me by phone at 604-451-6518 or by email at trevor.scofield@metrovancouver.org.

Sincerely,



Trevor Scofield
Permitting Specialist, Environmental Regulation and Enforcement Division

TRS/KEP/trs

cc: Jim Gordon, P. Eng., Director of Engineering and Municipal Operations, City of White Rock (via email: JGordon@whiterockcity.ca)

Atts:

1. Excerpts from "Semiahmoo Renewable Natural Gas Facility Air Quality Dispersion Modelling Rev. 1" (Tetra Tech, June 5, 2023) – Executive Summary, Table 5-2, Figures 5.18 to 5.22, and Table 6-1.
2. Fraser Health document "Re: Scope of Fraser Health Healthy Environments Program review of Metro Vancouver air quality permit applications" (Fraser Health Authority, October 30, 2023).
3. Fraser Health's comments on the Semiahmoo RNG GP Corp. Environmental Protection Notice and air dispersion modelling report, received October 11, 2023.

EXECUTIVE SUMMARY

Andion North America Ltd. (Andion), in partnership with Semiahmoo First Nation, is proposing to develop, build, own and operate a commercial scale organic waste-to-renewable natural gas facility to be located on vacant and undeveloped lands on the Semiahmoo First Nation reserve in Surrey, British Columbia, approximately 1 km north of the Peace Arch border crossing. The proposed anaerobic digestion facility will accept and process discarded food waste and organic material for the purpose of diverting organic waste generated from landfill, producing biomethane (biogas) which will be upgraded to natural gas at the Project site and sold to FortisBC. The organic materials resource recovery process and upgrading of the biogas results in the discharge of various air contaminants including odorous compounds requiring an application for a Metro Vancouver Air Permit. This report describes the air dispersion modelling assessment which is a requirement of the air permit application process. Modelling of the emission rates described in the air permit application was conducted with CALPUFF.

Of the contaminants Andion has identified in its air permit application, predicted concentrations are above relevant assessment criteria at sensitive receptor locations for odour emitted from the biofilter. Exceedance of relevant odour criteria at identified sensitive receptors includes the Hills at Portal Golf Club (with peak impacts near Highway 99 adjacent to the proposed facility), and Peace Arch Duty Free (located 270 m south of the biofilter), and less frequently at Peace Arch Provincial Park (located 500 m south of the biofilter) and adjacent to portions of the Peace Arch border crossing on the Canadian side.

Nuisance odour is related to the type of odour and frequency and time of occurrence. While 1 Odour Unit (OU) represents an empirically derived value representative of odour detection for half the population in a laboratory setting, if existing background odour is present (i.e., background odour exceeding 1 OU), it is likely that odour originating from the biofilter at a concentration of 1 OU would not even be detectable outside the property lines. For this reason, the 5 OU and 10 OU thresholds were chosen since it would be more consistent with odour detection, and their frequency and timing of occurrence would be a more appropriate metric for assessing community impacts. Furthermore, odour nuisance is an olfactory perception which interferes with the enjoyment of outdoor activity or could ingress into a residence or business through an open window or door. Therefore, the seasonality and diurnal pattern of odour exceedance occurrence is another important consideration.

Of the identified receptors, an exceedance of 5 OU (more than once per year) is predicted to occur at the Hills at Portal Golf Club, Peace Arch Duty Free (and adjacent Highway 99) and Peace Arch Park (seven predicted occurrences per year), and an exceedance of 10 OU could occur only along the portion of the golf course nearest to Highway 99, adjacent to the proposed Project site. There are no predicted exceedances of 10 OU at any residence.

In addition to the predictions above, the majority of odour exceedances occur during fall and winter when people are much less likely to be outside golfing, frequenting Peace Arch Provincial Park, queuing at the border or have their residential windows open. In particular, less than 20% of the predicted exceedances at Peace Arch Park occur during the spring and summer. Similarly, the majority of predicted exceedances at the identified sensitive receptors also occurs during the nighttime.

Table 5-2: Air Quality Assessment Criteria – Air Contaminants

Contaminant	Averaging Period	Metro Vancouver Objective	Other Jurisdiction Criteria	
NO ₂	1-hour	113 µg/m ³ ^a	113 µg/m ³ ^a 79 µg/m ³ ^a	2020 CAAQS 2025 CAAQS
	Annual	32 µg/m ³ ^b	32 µg/m ³ ^b 22.5 µg/m ³ ^b	2020 CAAQS 2025 CAAQS
SO ₂	1-hour	183 µg/m ³	183 µg/m ³ ^c 170 µg/m ³ ^c	2020 CAAQS 2025 CAAQS
	Annual	13 µg/m ³ ^b	13 µg/m ³ ^b 10.5 µg/m ³ ^b	2020 CAAQS 2025 CAAQS
NH ₃	1-Hour	-	1,400 µg/m ³	Alberta (Odour Basis)
			180 µg/m ³	TCEQ ⁱ (Health Basis)
	24-hour	-	100 µg/m ³ ^{d,e}	Ontario POI ^k
	Annual	-	92 µg/m ³	TCEQ ⁱ (Health Basis)
H ₂ S	10-minute	-	13 µg/m ³ ^{d,e}	Ontario POI (Odour Basis) ^k
	1-hour (Acceptable)	14 µg/m ³ (as TRS)	14 µg/m ³	Alberta (Odour Perception) ^l
	1-hour (Desirable)	7 µg/m ³ (as TRS)	-	-
	24-hour	-	4 µg/m ³	Alberta (Health) ^l
VOCs	See Table 5-4 and Table 5-5			
Odour	4 minutes	-	1 OU ^f 5 OU ^g	Quebec (Guideline for Composting and biogas activities) ^m
	4 minutes	-	5 OU ^f 10 OU ^h	Boucherville, QC (bylaw, all facilities)
	10 minutes	-	1 OU ⁱ	Ontario
3 OU		-	Regulatory Approach	

Except where noted, Metro Vancouver objectives are "not to be exceeded".

- a. Achievement based on annual 98th percentile of the daily 1-hour maximum, averaged over three consecutive years.
- b. Achievement based on annual average of 1-hour concentrations over one year.
- c. Achievement based on annual 99th percentile of daily 1-hour maximum, averaged over three consecutive years.
- d. Ontario Point-of-Impingement (POI) Standards are an assessment of facility emissions at off-property locations exclusive of cumulative background.
- e. For 24-hour averaging periods, Ontario allows for removal of the highest predicted concentration per modelled year. For shorter averaging periods, such as 1-hour (10-min) concentrations, Ontario allows for removal of 8 highest predictions per modelled year.
- f. Based on 98th percentile maximum at nearest sensitive receptor.
- g. Based on 99.5th percentile maximum at nearest sensitive receptor.
- h. Based on 100th percentile maximum at nearest sensitive receptor.
- i. Based on 99.5th percentile maximum at sensitive receptors.
- j. Texas Commission on Environmental Quality Toxicity Factor Database (TCEQ 2023).
- k. Ontario Regulation 419/05. Air Pollution – Local Air Quality (MECP 2022).
- l. Alberta Ambient Air Quality Objectives (AEP 2019).
- m. MELCC 2022.

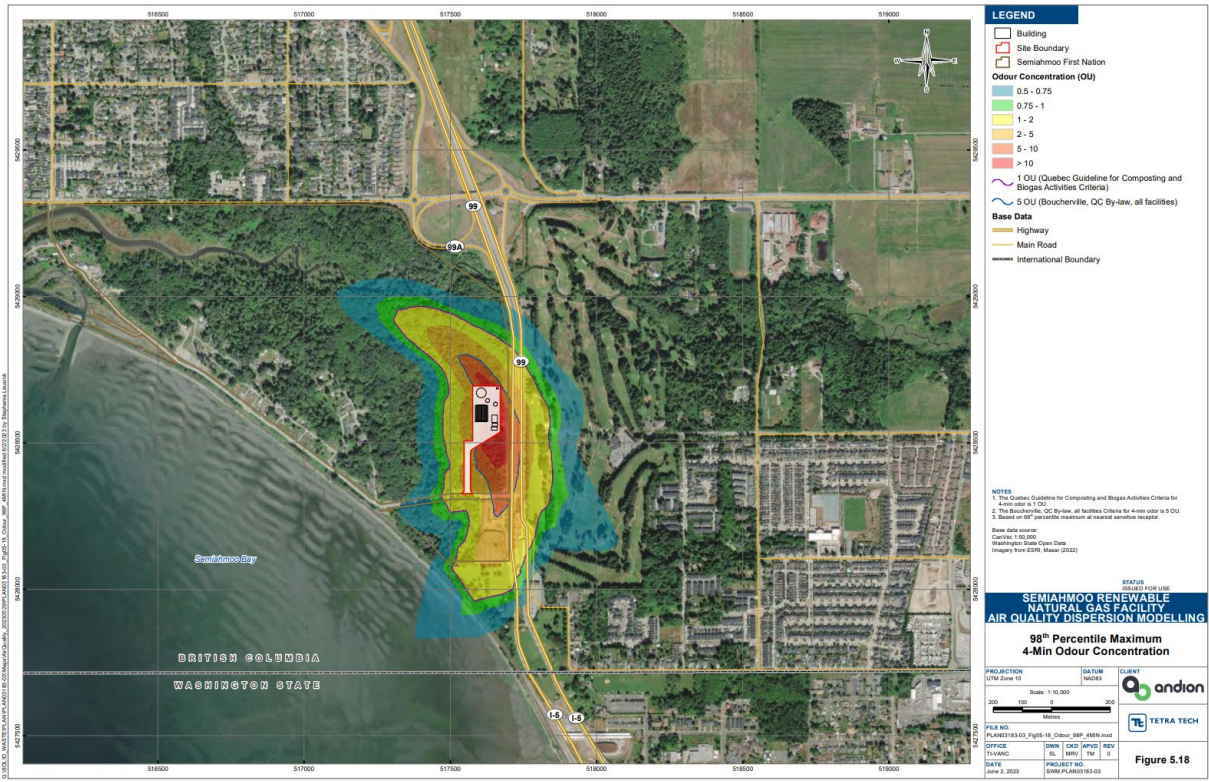
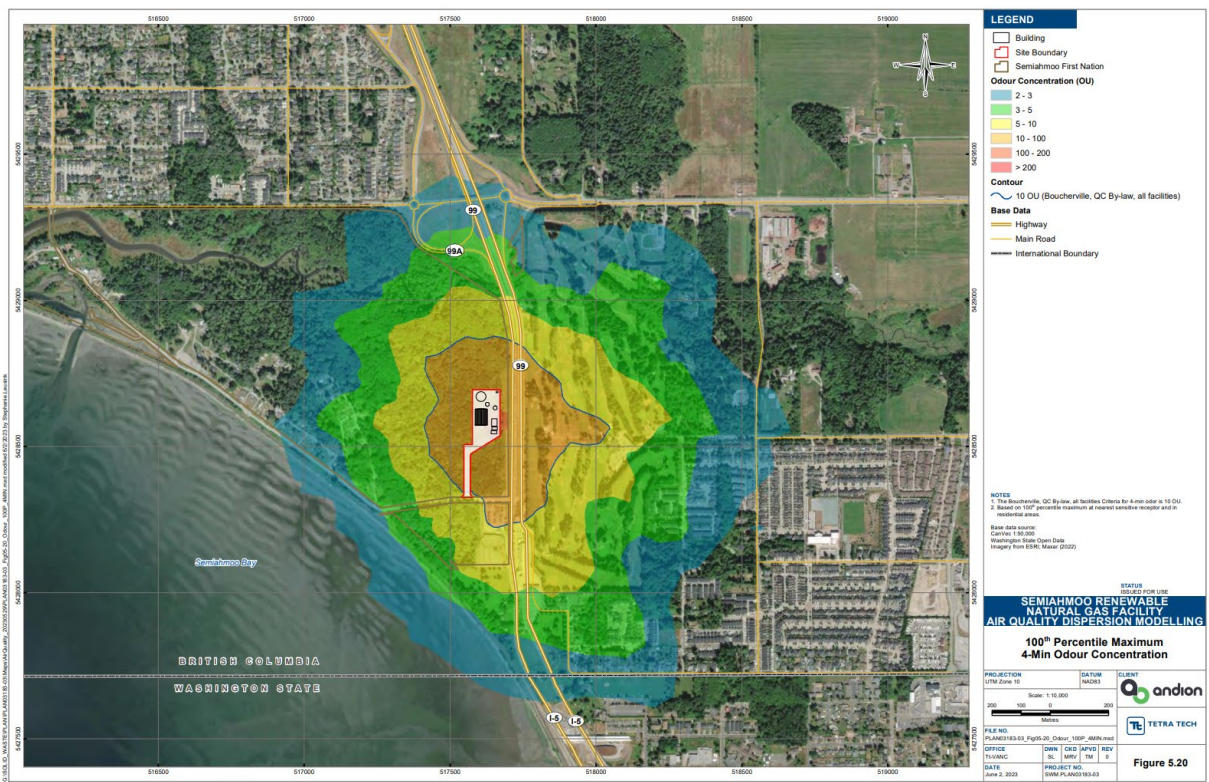
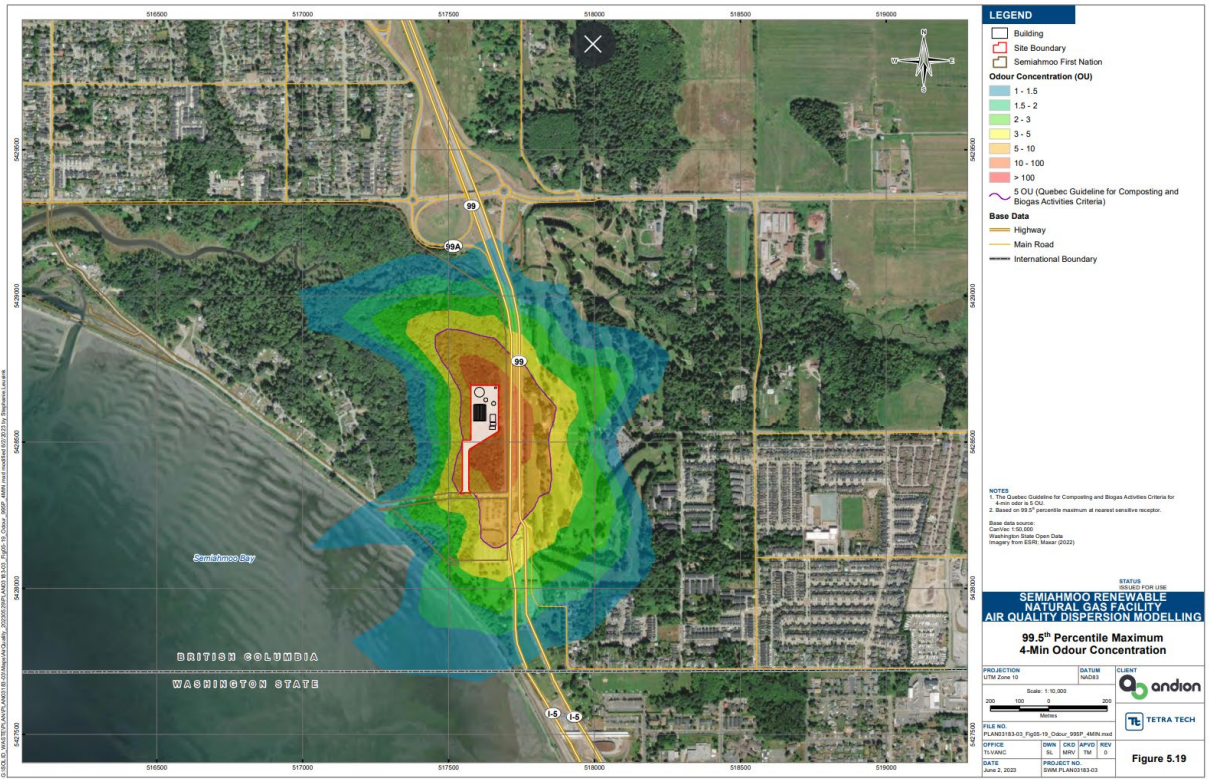


Figure 5.18



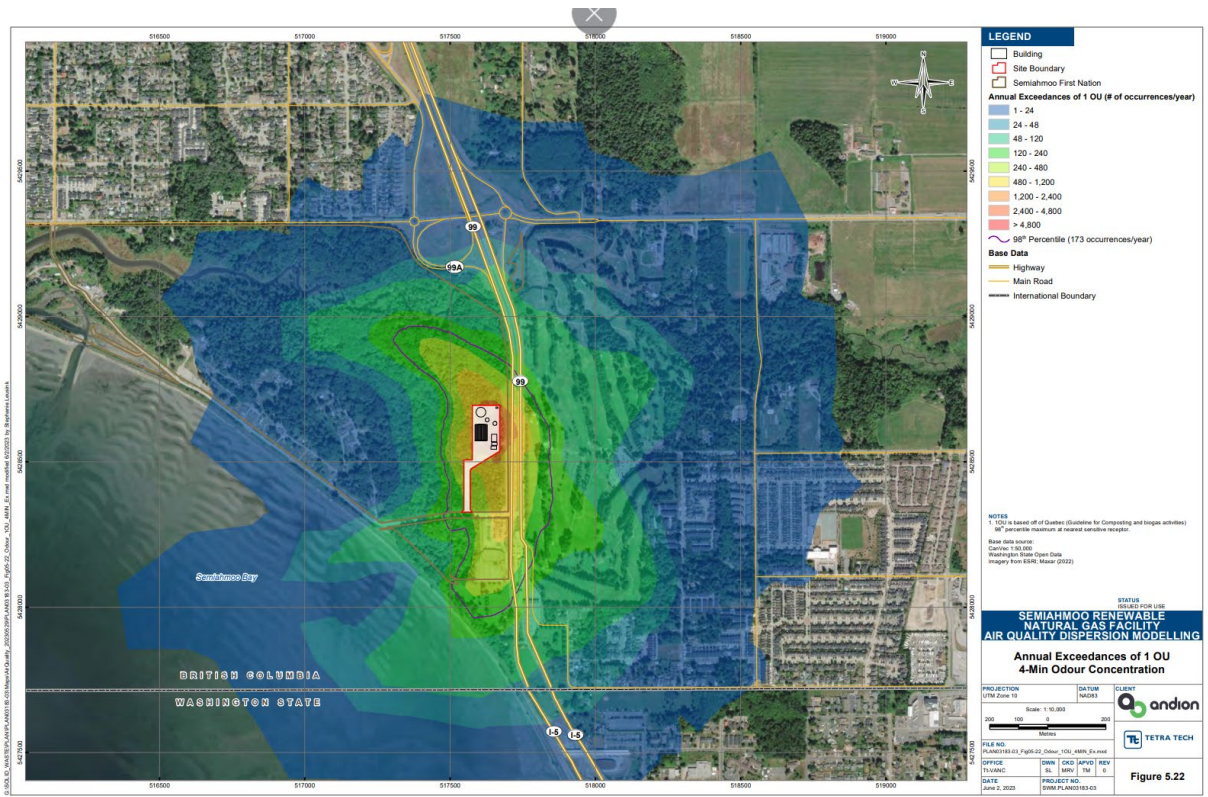
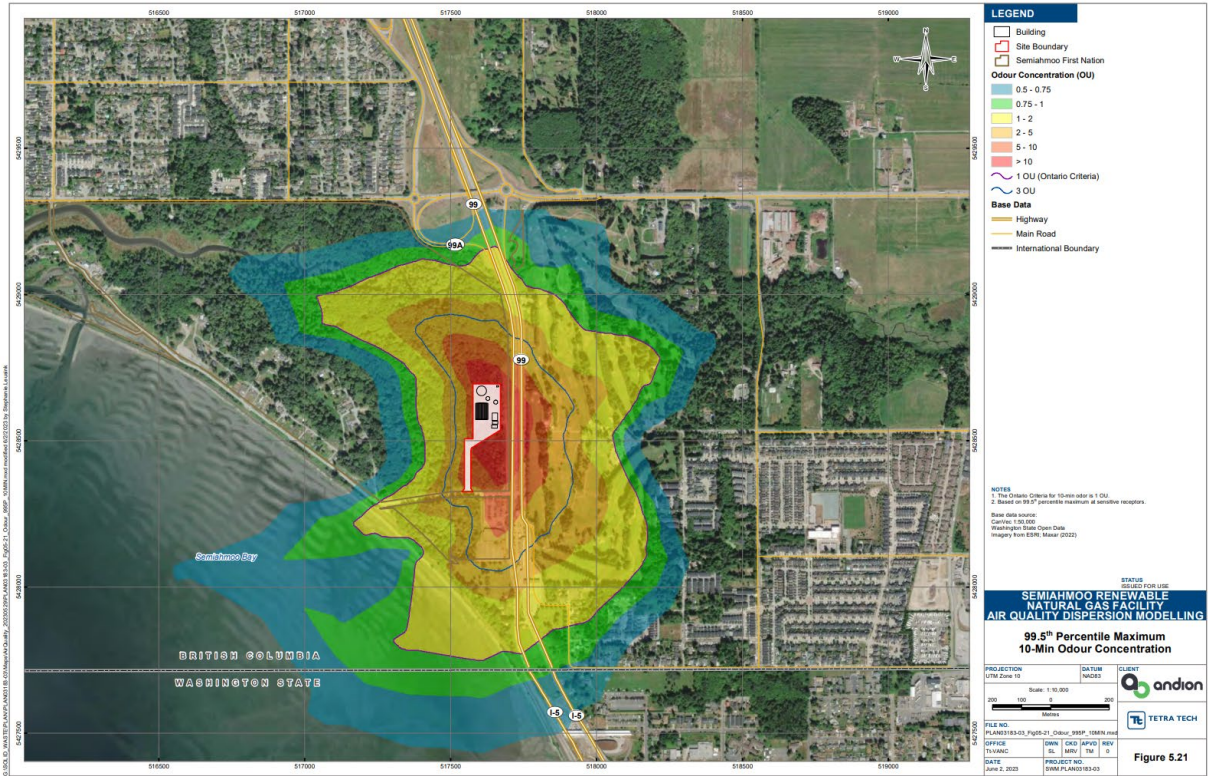


Table 6-1: Summary of Predicted Contaminant Concentrations Against Air Quality Criteria

Contaminant	Averaging Period	Criteria	Jurisdiction	Prediction at Criteria Metric ($\mu\text{g}/\text{m}^3$)			
				Exclusive Background		Inclusive Background	
				Fenceline	Most Impacted Receptor	Fenceline	Most Impacted Receptor
NO ₂	1-Hour	113 $\mu\text{g}/\text{m}^3$	Metro Vancouver	88.7	41.3	157.7	110.3
		79 $\mu\text{g}/\text{m}^3$	2025 CAAQS				
	Annual	32 $\mu\text{g}/\text{m}^3$	2020 CAAQS	20.5	2.3	37.8	19.6
		22.5 $\mu\text{g}/\text{m}^3$	2025 CAAQS				
SO ₂	1-Hour	183 $\mu\text{g}/\text{m}^3$	Metro Vancouver	51.6	10.1	65.7	24.2
			2020 CAAQS	41.2	6.8	55.3	20.9
		170 $\mu\text{g}/\text{m}^3$	2025 CAAQS				
	Annual	13 $\mu\text{g}/\text{m}^3$	2020 CAAQS	1.8	0.3	2.5	1.0
10.5 $\mu\text{g}/\text{m}^3$		2025 CAAQS					
NH ₃	1-Hour	180 $\mu\text{g}/\text{m}^3$	Alberta	30.4	8.4	-	-
	24-Hour	100 $\mu\text{g}/\text{m}^3$	Ontario POI	4.3	0.7	-	-
	Annual	92 $\mu\text{g}/\text{m}^3$	TCEQ ESL	1.2	0.1	-	-
H ₂ S	10-Minute	13 $\mu\text{g}/\text{m}^3$	Ontario POI	44.9	11.9	-	-
	24-Hour	4 $\mu\text{g}/\text{m}^3$	Alberta	8.0	1.4	-	-
TRS	1-Hour	14 $\mu\text{g}/\text{m}^3$	Metro Vancouver (Acceptable)	51.2	14.0	-	-
		7 $\mu\text{g}/\text{m}^3$	Metro Vancouver (Desirable)				



Health Protection Services
300 - 205 Newport Dr
Port Moody, B.C. V3H 5C9
604-949-7701

October 30, 2023

Re: Scope of Fraser Health Healthy Environments Program review of Metro Vancouver air quality permit applications

Fraser Health reviews Metro Vancouver Air Quality Permit Applications to provide comment on potential concerns to human health. As part of this work, we review all application materials, including any dispersion model reports that have been developed for the applicant's submission. When reviewing dispersion models, we primarily focus on whether relevant reference values for potential health-related exposures, including air quality and odour, are expected to be approached or exceeded, particularly at locations where sensitive receptors have been identified.

Fraser Health provides recommendations to Metro Vancouver whenever exceedances are expected to occur, or when any other concerns are identified. Generally, these recommendations vary from suggesting that Metro Vancouver clarify details of the facility's operation and mitigation measures proposed, work with the applicant to consider additional mitigation measures, and develop communication plans to document and respond to complaints. Fraser Health does not validate dispersion models, including methodology or data included in the application, or conduct an independent assessment of additional health effects not captured in the application.

Health Protection Services
Fraser Health

fraserhealth.ca   





**Environmental Regulation & Enforcement Division
Air Quality Permit Application Comment Form**

Attn: District Director Metro Vancouver 4515 Central Boulevard Burnaby, BC V5H 0C6	Telephone: 604-432-6200
	Fax:
	Email: AndionComments@metrovancover.org
Re: Semiahmoo RNG GP Corp.	File No.: AQ-10-01-1202

We have reviewed the application package, and

have comments/concerns as follows:

Air quality objectives/criteria are not predicted to be exceeded at sensitive receptor sites. Of note is that H₂S concentrations are predicted to approach or meet criterion values (for 10-min and 1-hour averages) approximately 5 times per year at the property fence line and/or at a particular area of the gold course (hole 2).

Exceedances are predicted for odour at several sensitive receptor sites, including the golf course and Peach Arch Duty Free. The dispersion model report notes that the majority of the exceedances occur at nighttime and during fall/winter seasons, which will help minimize exposure. There are likely no significant health hazards, but odour may be a nuisance.

the following would satisfy our concerns:

It is recommended that the applicant develop a communications plan to document and respond to odour complaints from the public. Additionally, Metro Vancouver may want to review the facility's odour management plan to see if any additional measures can be put in place, particularly at times when risk of exposure may be highest (e.g. spring/summer seasons, daytime).

Page 30 of the dispersion model report notes that "Andion would conduct sampling on its biogas once operational". Metro Vancouver may want to clarify if/how this sampling may inform any additional air quality and/or odour related mitigation measures to be considered and/or implemented, particularly if sampling shows H₂S emissions are higher than predicted levels. H₂S emissions are likely an important contributor to odour.

Date: Oct 11, 2023	Signature: <i>Prabjit Barn</i>
Telephone: 604-340-4795	Print Name: Prabjit Barn
Email: Prabjit.barn@fraserhealth.ca	Agency: Fraser Health Authority



SERVICES AND SOLUTIONS FOR A LIVABLE REGION