

# Summary of Odour Complaints Registered to the NRCB against Rimrock Feeders



## Contents

Introduction .....	1
Summary of complaints .....	1
Location of the complainants .....	2
Wind conditions during complaints.....	4
Conclusions.....	6

## Figures

Figure 1 Distribution of the 4,121 complaints registered by residents of the Town of High River. (A). Total number of complaints registered per subdivision. (B). Percentage of the total population of each subdivision that registered at least one odour complaint. ....	3
Figure 2 Frequency of odour complaints registered to the NRCB. (A) Number of complaints per combination of wind speed (1 m/s intervals) and direction (10° intervals). (B) Cumulative number of complaints per wind direction interval (10°). ....	5

## Tables

Table 1 Descriptive statistics of the number of complaints and unique identifiers attributed to individual complainants.....	1
Table 2 Locations attributed to individuals registering odour complaints against Rimrock Feeders based on the postal codes logged by the complainant. ....	2
Table 3 Details on local and regional meteorological stations used to collect wind data. ....	4
Table 4 Cumulative number of individual complaints over select wind direction intervals.....	5

## Introduction

Beginning in June of 2022, a significant number of odour complaints were filed against Rimrock Feeders, located at SE-05-019-29 W4M, by residents in the region of High River, Alberta. The objective of this document is to summarize the complaints registered to the NRCB against Rimrock Feeders, including the number and location of complainants and the frequency of complaints registered at specific wind speed and directions. This summary is intended to provide additional context toward understanding odour conditions in the High River region.

## Summary of complaints

Descriptive statistics of odour complaints received by the NRCB between June 1, 2022 and October 31, 2024 are summarized in Table 1. In total, 4,622 complaints were registered against Rimrock Feeders over the reporting period. These reports were submitted by 659 unique identifiable people, which can be interpreted as the total number of unique complainants. Of the total number of complaints, 64 complaints were submitted anonymously (1.3% of total complaints). For the purposes of this report, the anonymous complaints were considered as one single unique identifier for simplicity in the interpretation; therefore, all anonymous complaints were counted as an ‘anonymous’ identity for a total of 660 unique identities. As such, it is possible that more than 660, and up to 723, unique individuals had registered complaints.

The cumulative number of unique identities and complaints along with the major percentiles of the data distribution are shown in Table 1. The percentiles are interpreted as 10% of the complaints (462) being registered by two individuals, 50% of the complaints (2,311) being registered by 32 individuals, and so on. The distribution of the complaints registered per individual were highly variable: 312 individuals (47% of unique identities) registered single complaints, 18 individuals registered over 50 complaints each, 6 registered over 100 complaints each, and one individual registered 242 complaints (Table 1).

*Table 1 Descriptive statistics of the number of complaints and unique identifiers attributed to individual complainants.*

Data percentiles (% of data)	Cumulative number of complaints	Cumulative number of unique identities
5	242	1
10	462	2
25	1,156	8
50	2,311	32
75	3,467	113
90	4,160	272
95	4,391	433
100	4,622	660
	Total complaints	4,622
	Unique identities	660
	Identities with over 100 complaints each	6
	Identities with over 50 complaints each	18
	Identities with single complaints	312
	Anonymous complaints	64

## Location of the complainants

The registry of complaints logged in the NRCB database contains the postal codes reported by the complainants. The postal codes were used to identify the community where the complainant was located and is summarized in Table 2. In total, there were 4,121 (89.2%) complaints registered from residents of the Town of High River, 112 (2.4%) complaints from outside of High River, and 389 (8.4%) complaints were from individuals that did not provide a postal code (labelled as anonymous location).

*Table 2 Locations attributed to individuals registering odour complaints against Rimrock Feeders based on the postal codes logged by the complainant.*

Community	Complaints		Unique individuals	
	Number	Percentage of Total	Number	Percentage of Total
Anonymous	389	8.4	119	18
Aldersyde, AB	5	0.11	2	0.30
Blackie, AB	1	0.02	1	0.15
Calgary, AB	7	0.15	6	0.91
Claresholm, AB	1	0.02	1	0.15
Daysland, AB	6	0.13	1	0.15
Dunmore, AB	1	0.02	1	0.15
High River, AB	4,121	89.2	495	75
Longview, AB	1	0.02	1	0.15
Medicine Hat, AB	7	0.15	6	0.91
Okotoks, AB	79	1.7	24	3.6
Red Deer, AB	1	0.02	1	0.15
Taber, AB	2	0.04	1	0.15
Wainwright, AB	1	0.02	1	0.15
Total	4,622		660	

Additional context on the location of the complainants within High River is described by attributing the postal codes to specific subdivisions of the community. The subdivisions presented in Figure 1 were digitized from a map provided by the Town of High River, dated April 4, 2023. The total number of complaints registered from residents in each subdivision are presented in Figure 1A. The percentage of the population in each subdivision that registered at least one complaint is presented as Figure 1B; this was calculated from the number of unique identities in each subdivision divided by the population estimates for each subdivision provided by the Town of High River (ca. 2023). Evident from these graphics is that the northwest subdivisions, closer to Rimrock Feeders, registered a higher number of total complaints (352 – 1015), which were made by a larger percentage of the total population of the subdivision (6.3 – 8.7%). Fewer complaints and a lower percentage of the community registering complaints is evident in the southern and eastern subdivisions.

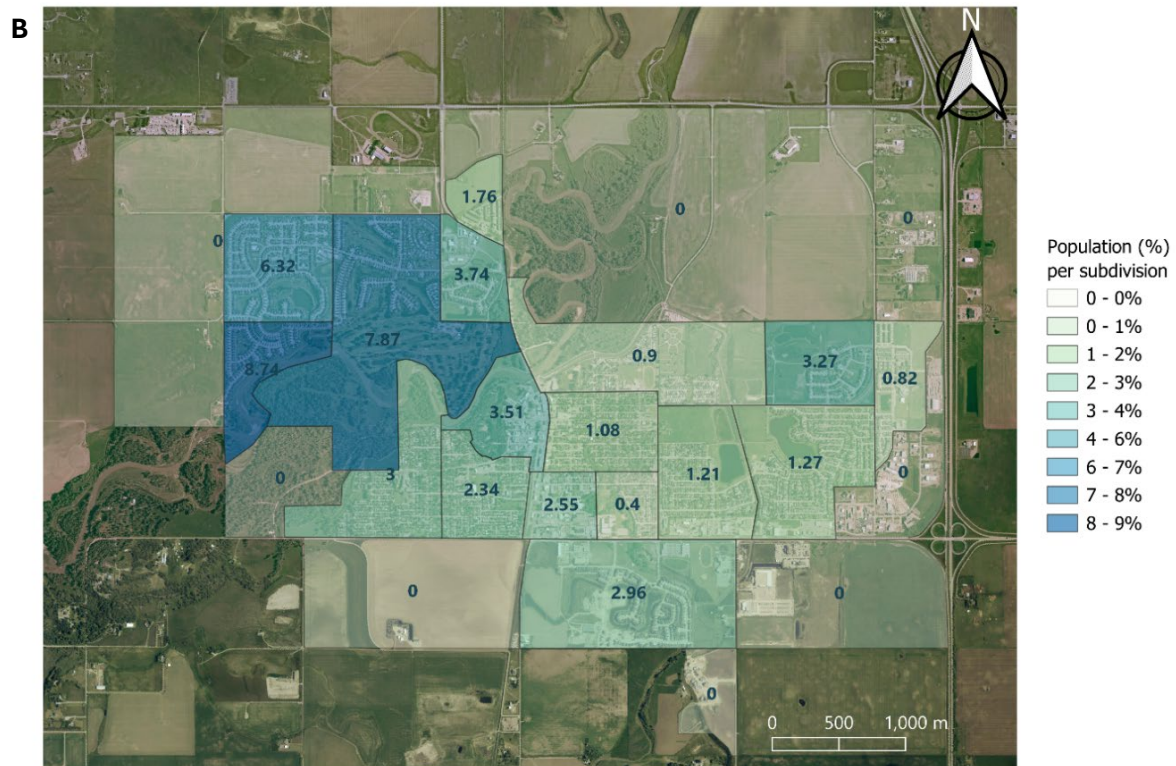
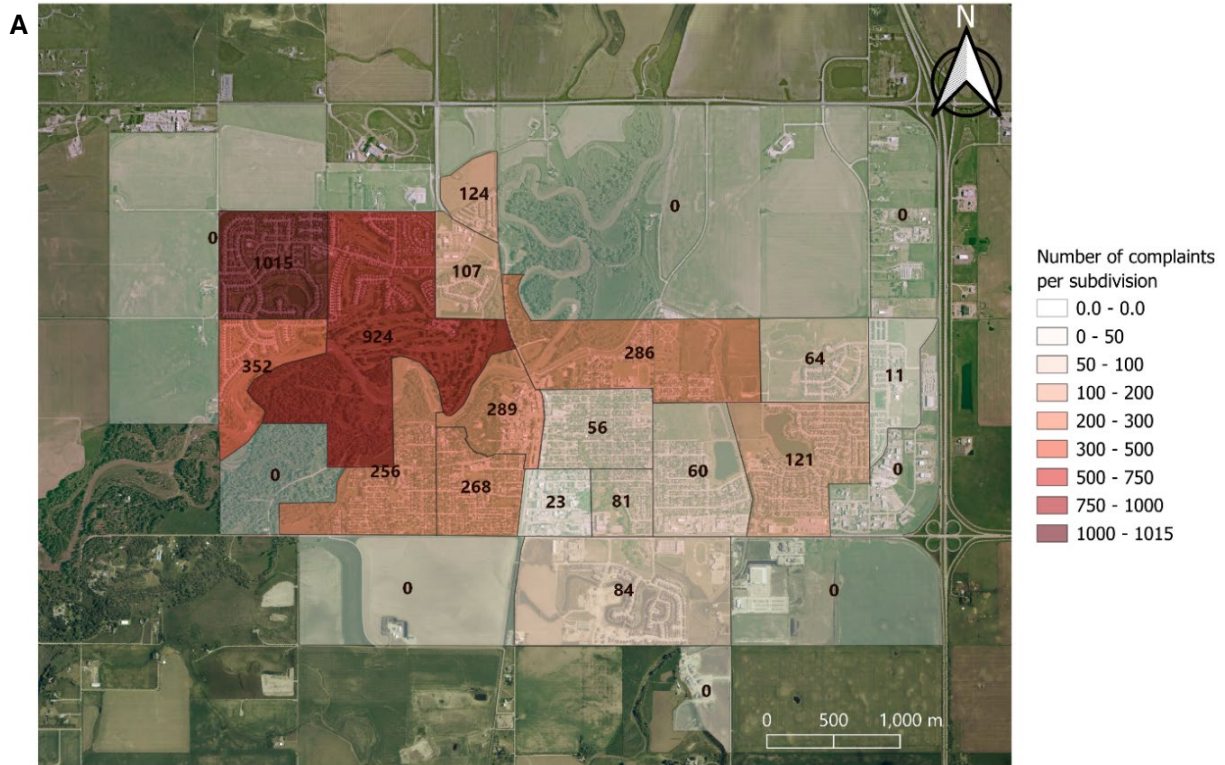


Figure 1 Distribution of the 4,121 complaints registered by residents of the Town of High River. (A). Total number of complaints registered per subdivision. (B). Percentage of the total population of each subdivision that registered at least one odour complaint.

## Wind conditions during complaints

The wind conditions occurring during the odour complaints were calculated according to the procedures described in an odour assessment report for the region<sup>1</sup>. Briefly, the wind speed and direction were estimated at an approximate centre-point of the community of High River (Hwy 2A and 3<sup>rd</sup> Ave SE) using an inverse-distance weighting (IDW) interpolation procedure. The locations and distances of the measured wind data to the community centre-point are listed in Table 3. The meteorological stations operated by Alberta Agriculture and Irrigation (AGI) were used as the primary stations; the High River portable air monitoring laboratory (HR-PAML) operated by the Calgary Region Airshed Zone (CRAZ), and the NRCB meteorological station SW of Rimrock monitoring points were included as available.

Table 3 Details on local and regional meteorological stations used to collect wind data.

Station	Operator	Latitude	Longitude	Wind height (m)	Distance defined in IDW (km)
HR-PAML	CRAZ	50.592	-113.902	10	2.5
SW of Rimrock	NRCB	50.572	-113.995	2	8.9
Azure	AGI	50.512	-114.013	2	12.6
Blackie	AGI	50.546	-113.640	10	16.8
Black Diamond	AGI	50.707	-114.152	10	24.4
Priddis	AGI	50.869	-114.292	10	43.8
Stavely	AGI	50.183	-113.883	10	44.2

The frequency of odour complaints registered by the NRCB at varying wind speeds and direction are presented in Figure 2. The frequency distributions were created using the openair package (v2.18-2)<sup>2</sup> in R (v4.2.1). The highest number of complaints are clearly associated with light to moderate wind speeds ranging from 1 – 4 m/s (4 – 15 km/h), and wind directions ranging from 235° – 285° (Figure 2A). The cumulative number of complaints registered at each wind speed (10° intervals) is presented in Figure 2B; the highest number of complaints (~1,300) were from wind directions between 255° – 265°, and high complaints were observed ±10° from this range (600 – 700 total complaints) and ±10° to ±20° from this range (~300 total complaints). Collectively, 70.9% of the total complaints were registered to the NRCB when the winds were blowing from 235° – 285° in direction of the approximate centre of High River (Table 4). This direction is considered as being from the direction of Rimrock Feeders, as well as other smaller confined feeding operations located northwest of Rimrock Feeders. The remaining 29.1% of complaints occurred when winds were blowing from other directions: approximately 3.2% of complaints were registered when winds were blowing from the northeast quadrant, 7.5% were registered from the southeast quadrant, 8.4% were from winds from the south-to-southwest (180° - 235°) direction, and 10% were from the northwest quadrant (285° - 360°).

<sup>1</sup> [Community-level odour monitoring in High River, Alberta. \(2024\). Natural Resources Conservation Board, Edmonton, Alberta. 46 pp.](#)

<sup>2</sup> [Openair: open source tools for air quality data analysis.](#)

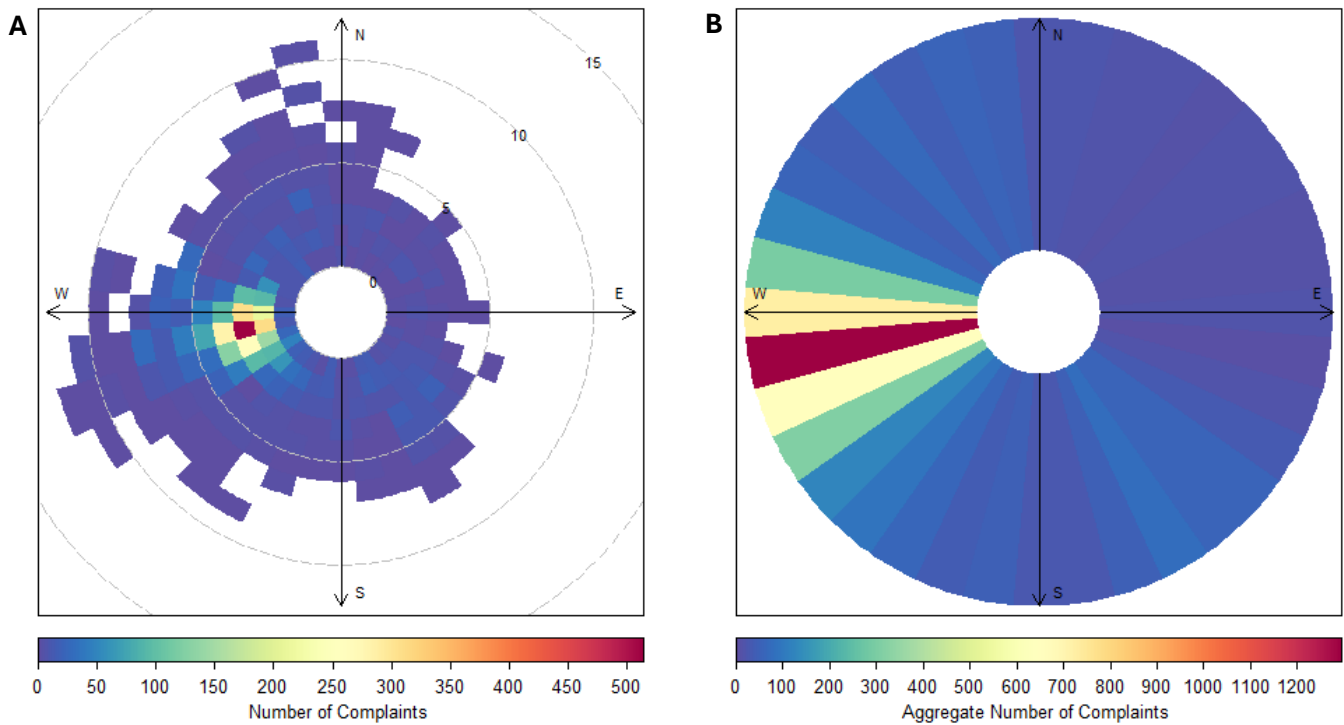


Figure 2 Frequency of odour complaints registered to the NRCB. (A) Number of complaints per combination of wind speed (1 m/s intervals) and direction (10° intervals). (B) Cumulative number of complaints per wind direction interval (10°).

Table 4 Cumulative number of individual complaints over select wind direction intervals.

Wind direction intervals (°)	General wind direction	Number of Individual Complaints	
		Total number	Percentage of total (%)
0 – 90	N to E	148	3.2
90 – 180	E to S	348	7.5
180 – 235	S to SW	386	8.4
235 – 285*	SW to WNW	3,278	70.9
285 – 360	WNW to N	462	10.0
Total		4622	

\* Defined as the wind directions at which High River is predominantly downwind from Rimrock Feeders and other confined feeding operations.

## Conclusions

The purpose of this summary was to provide context to the distribution of odour complaints registered to the NRCB against Rimrock Feeders. The following can be concluded from this summary:

1. From June 1, 2022 to October 31, 2024, 660 unique individuals registered a total of 4,622 odour complaints against Rimrock Feeders, located at SE-05-019-29 W4M.
  - a. The number of complaints per individual were highly variable: 47% (312) people registered single complaints and 50% of the complaints were registered by 32 people.
2. Approximately 89% of the registered complaints were attributed to the residents of High River; however, 8.4% of the complaints were from anonymous locations and could have been from High River residents.
  - a. Most of the complaints from High River residents were from the northwest subdivisions, which are proximally closer to the local CFOs.
3. Approximately 71% of the complaints were registered when winds were directionally from Rimrock Feeders and nearby CFOs; the remaining 29% of complaints occurred when winds were blowing from other directions and likely attributed to other point sources or distributed odour sources.