

APPENDIX 3-X

INHALATION RISK QUOTIENTS

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Table 1 Summary of Existing and Approved Case Acute Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [$\mu\text{g}/\text{m}^3$]	Averaging Period	Existing and Approved Conditions								
				Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Roche	Fence
Criteria Pollutants/ VOCs												
Aliphatic C2-C8 group	acute 1-hour	100,000	1-hr 9th	1.7E-04	4.0E-04	2.5E-04	2.3E-04	3.3E-04	2.4E-04	1.7E-04	3.7E-04	3.1E-04
Aliphatic C9-C16 group	acute 1-hour	2,600	1-hr 9th	1.7E-03	3.9E-03	2.7E-03	2.3E-03	3.2E-03	2.4E-03	1.8E-03	3.1E-03	3.2E-03
Aromatic C9-C16 group (with PAHs)	acute 1-hour	9,000	1-hr 9th	9.3E-05	2.1E-04	1.4E-04	1.2E-04	1.6E-04	1.2E-04	9.2E-05	1.5E-04	1.6E-04
Benzene	acute 24-hour	30	24-hr MAX	6.2E-03	3.6E-03	2.1E-03	2.0E-03	2.5E-03	2.0E-03	1.8E-03	3.3E-02	2.2E-03
Carbon	acute 1-hour	15,000	1-hr 9th	1.9E-02	2.6E-02	2.2E-03	2.3E-03	2.8E-03	2.5E-03	2.7E-03	1.8E-03	1.2E-02
CO	acute 8-hour	6,000	8-hr MAX	2.7E-02	4.3E-02	5.7E-03	4.7E-03	7.2E-03	5.0E-03	4.6E-03	4.5E-03	2.2E-02
Carbon disulphide group	acute 1-hour	6,200	1-hr 9th	4.0E-06	8.1E-06	5.3E-06	5.0E-06	6.7E-06	5.7E-06	4.0E-06	4.8E-06	7.9E-05
Ethylbenzene	acute 24-hour	4,340	24-hr MAX	1.0E-04	1.9E-04	1.0E-04	1.1E-04	1.5E-04	1.1E-04	1.0E-04	1.3E-04	1.3E-04
Formaldehyde	acute 1-hour	50	1-hr 9th	3.5E-02	8.7E-03	4.8E-03	5.3E-03	6.8E-03	5.5E-03	1.1E-02	2.2E-02	1.4E-02
Hexane	acute 1-hour	4,300	1-hr 9th	8.1E-04	2.1E-03	1.3E-03	1.2E-03	1.6E-03	1.2E-03	8.2E-04	2.0E-03	1.5E-03
H ₂ S	acute 1-hour	98	1-hr 9th	4.7E-03	1.3E-03	9.0E-04	1.7E-03	1.2E-03	3.0E-03	2.3E-03	8.8E-04	5.3E-02
Methyl ethyl ketone group	acute 1-hour	13,000	1-hr 9th	2.0E-05	2.3E-05	1.5E-05	1.5E-05	1.8E-05	1.5E-05	1.1E-05	7.3E-05	2.9E-05
Napthalenes	acute 1-hour	2,000	1-hr 9th	2.0E-06	1.9E-06	1.3E-06	2.7E-06	1.7E-06	4.5E-06	1.0E-06	1.1E-06	7.4E-05
NO ₂	acute 1-hour	400	1-hr 9th	2.1E-01	1.4E-01	5.2E-02	6.7E-02	7.5E-02	7.8E-02	9.3E-02	4.8E-02	2.1E-01
NO ₂	acute 24-hour	200	24-hr MAX	1.6E-01	1.2E-01	5.8E-02	5.8E-02	7.5E-02	6.0E-02	6.6E-02	6.0E-02	2.1E-01
PM _{2.5}	acute 24-hour	30	24-hr 98th	3.1E-01	3.3E-01	1.2E-01	1.2E-01	1.3E-01	1.3E-01	1.1E-01	8.4E-02	2.0E-01
SO ₂	acute 10-minute	500	1-hr 9th	5.0E-02	7.3E-02	5.3E-02	1.7E-01	6.5E-02	1.3E-01	5.7E-02	4.0E-02	8.1E-01
SO ₂	acute 1-hour	450	1-hr 9th	3.9E-02	5.7E-02	4.1E-02	1.4E-01	5.1E-02	1.0E-01	4.4E-02	3.1E-02	6.3E-01
SO ₂	acute 24-hour	150	24-hr MAX	6.2E-02	8.9E-02	7.0E-02	1.3E-01	8.0E-02	1.6E-01	6.3E-02	3.3E-02	4.4E-01
Toluene	acute 1-hour	37,000	1-hr 9th	2.9E-05	7.1E-05	4.8E-05	4.1E-05	6.0E-05	4.2E-05	3.1E-05	5.4E-05	4.8E-05
Trimethylbenzene	acute 1-hour	5,000	1-hr 9th	3.0E-05	7.2E-05	5.1E-05	4.2E-05	6.3E-05	4.4E-05	3.2E-05	4.9E-05	5.0E-05
Xylenes	acute 1-hour	8,700	1-hr 9th	1.6E-04	3.7E-04	2.5E-04	2.1E-04	2.9E-04	2.2E-04	1.6E-04	2.6E-04	2.5E-04
arsenic	acute 1-hour	0.19	1-hr 9th	2.5E-04	4.0E-04	2.7E-04	3.4E-04	3.4E-04	3.6E-04	2.3E-04	2.7E-04	2.0E-03
beryllium	acute 1-hour	0.25	1-hr 9th	1.3E-05	2.1E-05	1.4E-05	1.6E-05	1.7E-05	1.7E-05	1.3E-05	1.3E-05	9.4E-05
chromium_6	acute 24-hour	1	24-hr MAX	4.7E-05	7.3E-05	5.1E-05	5.3E-05	6.4E-05	5.3E-05	4.8E-05	3.1E-05	1.2E-04
copper	acute 1-hour	100	1-hr 9th	2.0E-06	3.3E-06	2.2E-06	2.6E-06	2.8E-06	2.7E-06	1.9E-06	1.7E-06	1.7E-05
lead	acute 24-hour	0.8	24-hr MAX	1.2E-04	2.0E-04	1.5E-04	1.4E-04	1.7E-04	1.5E-04	1.3E-04	9.9E-05	5.2E-04
mercury	acute 1-hour	1.8	1-hr 9th	2.0E-05	3.2E-05	2.2E-05	4.1E-05	2.8E-05	4.4E-05	1.9E-05	1.8E-05	2.8E-04
nickel	acute 1-hour	6	1-hr 9th	3.3E-04	5.7E-04	3.8E-04	3.4E-04	4.6E-04	3.7E-04	3.1E-04	3.9E-04	7.2E-04
vanadium	acute 24-hour	0.2	24-hr MAX	6.7E-03	6.0E-03	1.0E-02	1.0E-02	7.6E-03	1.0E-02	7.0E-03	2.9E-03	1.4E-02
Mixtures												
Eye irritants	acute	n/a	n/a	3.5E-02	8.7E-03	4.8E-03	5.3E-03	6.8E-03	5.5E-03	1.1E-02	2.2E-02	1.4E-02
Nasal irritants	acute	n/a	n/a	3.5E-02	8.7E-03	4.8E-03	5.3E-03	6.8E-03	5.5E-03	1.1E-02	2.2E-02	1.4E-02
Respiratory irritants	acute	n/a	n/a	2.9E-01	2.4E-01	1.4E-01	2.5E-01	1.6E-01	2.5E-01	1.7E-01	1.0E-01	1.1E+00
Hepato- and renal toxicants	acute	n/a	n/a	2.6E-04	6.2E-04	3.9E-04	3.5E-04	4.8E-04	3.6E-04	2.6E-04	5.1E-04	4.7E-04
Immunotoxicants	acute	n/a	n/a	6.5E-03	4.2E-03	2.4E-03	2.3E-03	3.0E-03	2.4E-03	2.1E-03	3.4E-02	3.0E-03
Neurotoxicants	acute	n/a	n/a	3.0E-03	6.9E-03	4.6E-03	4.0E-03	5.6E-03	4.2E-03	3.1E-03	5.7E-03	5.9E-03
Reproductive/developmental toxicants	acute	n/a	n/a	5.0E-04	8.3E-04	5.5E-04	6.4E-04	6.9E-04	6.7E-04	4.8E-04	5.2E-04	3.1E-03

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Note: Bold values indicate risk quotient values that exceed 1.0, indicating that the air concentration exceeds the compound's exposure limit.

Table 2 Summary of Project Case Acute Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [µg/m³]	Averaging Period	Project Case								
				Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs												
Aliphatic C2-C8 group	acute 1-hour	100,000	1-hr 9th	1.7E-04	4.0E-04	2.6E-04	2.4E-04	3.3E-04	2.4E-04	1.7E-04	3.7E-04	4.9E-04
Aliphatic C9-C16 group	acute 1-hour	2,600	1-hr 9th	1.7E-03	3.9E-03	2.7E-03	2.3E-03	3.2E-03	2.4E-03	1.8E-03	3.1E-03	4.1E-03
Aromatic C9-C16 group (with PAHs)	acute 1-hour	9,000	1-hr 9th	9.3E-05	2.1E-04	1.4E-04	1.2E-04	1.6E-04	1.2E-04	9.2E-05	1.5E-04	1.6E-04
Benzene	acute 24-hour	30	24-hr MAX	6.2E-03	3.6E-03	2.1E-03	2.0E-03	2.5E-03	2.0E-03	1.8E-03	3.3E-02	2.3E-03
CO	acute 1-hour	15,000	1-hr 9th	1.9E-02	2.6E-02	4.0E-03	2.5E-03	2.9E-03	2.7E-03	2.8E-03	1.8E-03	3.1E-02
CO	acute 8-hour	6,000	8-hr MAX	2.8E-02	4.3E-02	7.2E-03	5.1E-03	7.2E-03	5.4E-03	4.6E-03	4.5E-03	6.2E-02
Carbon disulphide group	acute 1-hour	6,200	1-hr 9th	4.0E-06	8.1E-06	6.1E-06	5.1E-06	6.7E-06	5.8E-06	4.1E-06	4.8E-06	1.1E-04
Ethylbenzene	acute 24-hour	4,340	24-hr MAX	1.0E-04	1.9E-04	1.0E-04	1.1E-04	1.5E-04	1.1E-04	1.0E-04	1.3E-04	1.3E-04
Formaldehyde	acute 1-hour	50	1-hr 9th	3.5E-02	8.7E-03	5.0E-03	5.3E-03	6.9E-03	5.5E-03	1.1E-02	2.2E-02	1.5E-02
Hexane	acute 1-hour	4,300	1-hr 9th	8.2E-04	2.1E-03	1.3E-03	1.2E-03	1.6E-03	1.2E-03	8.3E-04	2.0E-03	1.9E-03
H2S	acute 1-hour	98	1-hr 9th	4.7E-03	1.3E-03	3.3E-03	1.7E-03	1.4E-03	3.2E-03	2.3E-03	8.8E-04	7.6E-02
Methyl ethyl ketone group	acute 1-hour	13,000	1-hr 9th	2.0E-05	2.3E-05	1.5E-05	1.5E-05	1.8E-05	1.5E-05	1.1E-05	7.3E-05	4.1E-05
Napthalenes	acute 1-hour	2,000	1-hr 9th	2.0E-06	1.9E-06	2.8E-06	2.7E-06	1.9E-06	4.5E-06	1.1E-06	1.1E-06	7.5E-05
NO ₂	acute 1-hour	400	1-hr 9th	2.1E-01	1.4E-01	1.4E-01	7.4E-02	7.8E-02	8.0E-02	9.3E-02	4.8E-02	3.9E-01
NO ₂	acute 24-hour	200	24-hr MAX	1.6E-01	1.2E-01	9.2E-02	6.5E-02	7.5E-02	6.7E-02	6.6E-02	6.0E-02	2.2E-01
PM _{2.5}	acute 24-hour	30	24-hr 98th	3.2E-01	3.4E-01	1.4E-01	1.3E-01	1.5E-01	1.4E-01	1.2E-01	8.5E-02	3.3E-01
SO ₂	acute 10-minute	500	1-hr 9th	5.1E-02	7.3E-02	5.4E-02	1.7E-01	7.1E-02	1.3E-01	5.9E-02	4.0E-02	1.2E+00
SO ₂	acute 1-hour	450	1-hr 9th	4.0E-02	5.7E-02	4.2E-02	1.4E-01	5.5E-02	1.0E-01	4.6E-02	3.1E-02	9.2E-01
SO ₂	acute 24-hour	150	24-hr MAX	6.6E-02	9.0E-02	7.5E-02	1.3E-01	8.0E-02	1.6E-01	6.6E-02	3.3E-02	7.9E-01
Toluene	acute 1-hour	37,000	1-hr 9th	2.9E-05	7.1E-05	4.8E-05	4.1E-05	6.0E-05	4.2E-05	3.1E-05	5.4E-05	4.8E-05
Trimethylbenzene	acute 1-hour	5,000	1-hr 9th	3.0E-05	7.2E-05	5.1E-05	4.2E-05	6.3E-05	4.4E-05	3.2E-05	4.9E-05	5.0E-05
Xylenes	acute 1-hour	8,700	1-hr 9th	1.6E-04	3.7E-04	2.5E-04	2.1E-04	2.9E-04	2.2E-04	1.6E-04	2.6E-04	2.5E-04
arsenic	acute 1-hour	0.19	1-hr 9th	2.5E-04	4.0E-04	6.3E-04	3.6E-04	3.6E-04	4.0E-04	2.4E-04	2.7E-04	5.7E-03
beryllium	acute 1-hour	0.25	1-hr 9th	1.3E-05	2.1E-05	2.9E-05	1.7E-05	1.7E-05	1.8E-05	1.3E-05	1.3E-05	2.6E-04
chromium_6	acute 24-hour	1	24-hr MAX	4.8E-05	7.3E-05	5.7E-05	5.5E-05	6.4E-05	5.6E-05	4.8E-05	3.1E-05	2.3E-04
copper	acute 1-hour	100	1-hr 9th	2.0E-06	3.4E-06	5.0E-06	2.8E-06	2.9E-06	3.0E-06	2.0E-06	1.7E-06	4.6E-05
lead	acute 24-hour	0.8	24-hr MAX	1.2E-04	2.0E-04	1.7E-04	1.6E-04	1.8E-04	1.6E-04	1.3E-04	9.9E-05	1.0E-03
mercury	acute 1-hour	1.8	1-hr 9th	2.2E-05	3.2E-05	8.6E-05	4.4E-05	3.6E-05	4.8E-05	2.5E-05	1.8E-05	7.8E-04
nickel	acute 1-hour	6	1-hr 9th	3.3E-04	5.7E-04	3.9E-04	3.5E-04	4.7E-04	3.7E-04	3.1E-04	3.9E-04	1.9E-03
vanadium	acute 24-hour	0.2	24-hr MAX	6.8E-03	6.0E-03	1.1E-02	1.0E-02	7.9E-03	1.0E-02	7.0E-03	2.9E-03	2.0E-02
Mixtures												
Eye irritants	acute	n/a	n/a	3.5E-02	8.7E-03	5.0E-03	5.3E-03	6.9E-03	5.5E-03	1.1E-02	2.2E-02	1.5E-02
Nasal irritants	acute	n/a	n/a	3.5E-02	8.8E-03	5.0E-03	5.3E-03	6.9E-03	5.5E-03	1.1E-02	2.2E-02	1.5E-02
Respiratory irritants	acute	n/a	n/a	2.9E-01	2.4E-01	2.3E-01	2.6E-01	1.7E-01	2.5E-01	1.7E-01	2.0E-01	1.7E+00
Hepato- and renal toxicants	acute	n/a	n/a	2.6E-04	6.2E-04	4.0E-04	3.5E-04	4.8E-04	3.6E-04	2.6E-04	5.1E-04	6.5E-04
Immunotoxicants	acute	n/a	n/a	6.5E-03	4.2E-03	2.5E-03	2.3E-03	3.0E-03	2.4E-03	2.1E-03	3.4E-02	4.2E-03
Neurotoxicants	acute	n/a	n/a	3.0E-03	6.9E-03	4.7E-03	4.1E-03	5.6E-03	4.3E-03	3.1E-03	5.7E-03	7.7E-03
Reproductive/developmental toxicants	acute	n/a	n/a	5.0E-04	8.3E-04	9.9E-04	6.8E-04	7.2E-04	7.2E-04	5.0E-04	5.2E-04	7.7E-03

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Note: Bold values indicate risk quotient values that exceed 1.0, indicating that the air concentration exceeds the compound's exposure limit.

Table 3 Summary of Planned Development Case Acute Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [$\mu\text{g}/\text{m}^3$]	Averaging Period	Planned Development Case								
				Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs												
Aliphatic C2-C8 group	acute 1-hour	100,000	1-hr 9th	2.2E-04	5.1E-04	3.3E-04	2.9E-04	4.0E-04	3.1E-04	2.2E-04	4.3E-04	5.3E-04
Aliphatic C9-C16 group	acute 1-hour	2,600	1-hr 9th	2.4E-03	5.0E-03	3.4E-03	2.9E-03	4.2E-03	2.9E-03	2.4E-03	3.5E-03	4.5E-03
Aromatic C9-C16 group (with PAHs)	acute 1-hour	9,000	1-hr 9th	1.2E-04	2.6E-04	1.7E-04	1.5E-04	1.9E-04	1.6E-04	1.2E-04	1.8E-04	2.0E-04
Benzene	acute 24-hour	30	24-hr MAX	6.3E-03	4.0E-03	2.7E-03	2.6E-03	3.2E-03	2.6E-03	2.4E-03	3.3E-02	2.9E-03
CO	acute 1-hour	15,000	1-hr 9th	1.9E-02	2.7E-02	4.1E-03	2.8E-03	3.2E-03	3.1E-03	2.9E-03	2.0E-03	3.1E-02
CO	acute 8-hour	6,000	8-hr MAX	2.8E-02	4.4E-02	8.1E-03	6.0E-03	8.3E-03	6.3E-03	5.4E-03	5.2E-03	6.2E-02
Carbon disulphide group	acute 1-hour	6,200	1-hr 9th	4.9E-06	9.6E-06	6.8E-06	6.1E-06	7.6E-06	6.7E-06	5.0E-06	5.4E-06	1.1E-04
Ethylbenzene	acute 24-hour	4,340	24-hr MAX	1.1E-04	2.1E-04	1.1E-04	1.2E-04	1.6E-04	1.2E-04	1.1E-04	1.4E-04	1.5E-04
Formaldehyde	acute 1-hour	50	1-hr 9th	3.6E-02	1.1E-02	6.3E-03	6.5E-03	8.5E-03	6.6E-03	1.1E-02	2.2E-02	1.5E-02
Hexane	acute 1-hour	4,300	1-hr 9th	1.1E-03	2.6E-03	1.7E-03	1.6E-03	2.1E-03	1.6E-03	1.0E-03	2.4E-03	2.2E-03
H ₂ S	acute 1-hour	98	1-hr 9th	4.7E-03	1.3E-03	3.4E-03	1.8E-03	1.5E-03	3.2E-03	2.4E-03	9.4E-04	7.6E-02
Methyl ethyl ketone group	acute 1-hour	13,000	1-hr 9th	2.1E-05	2.6E-05	1.7E-05	1.7E-05	2.0E-05	1.7E-05	1.5E-05	3.3E-05	4.1E-05
Napthalenes	acute 1-hour	2,000	1-hr 9th	3.3E-06	3.9E-06	3.2E-06	3.1E-06	2.9E-06	4.6E-06	2.0E-06	1.4E-06	7.5E-05
NO ₂	acute 1-hour	400	1-hr 9th	2.2E-01	1.7E-01	1.5E-01	8.5E-02	9.8E-02	9.4E-02	1.1E-01	6.1E-02	3.9E-01
NO ₂	acute 24-hour	200	24-hr MAX	1.7E-01	1.5E-01	1.0E-01	9.1E-02	1.1E-01	9.3E-02	8.8E-02	7.8E-02	2.2E-01
PM _{2.5}	acute 24-hour	30	24-hr 98th	3.6E-01	3.7E-01	1.7E-01	1.7E-01	1.9E-01	1.7E-01	1.6E-01	1.0E-01	3.6E-01
SO ₂	acute 10-minute	500	1-hr 9th	5.6E-02	9.1E-02	5.7E-02	7.8E-02	7.3E-02	1.0E-01	6.3E-02	4.5E-02	1.2E+00
SO ₂	acute 1-hour	450	1-hr 9th	4.3E-02	7.1E-02	4.5E-02	6.1E-02	5.6E-02	7.8E-02	4.9E-02	3.5E-02	9.3E-01
SO ₂	acute 24-hour	150	24-hr MAX	8.1E-02	1.2E-01	9.4E-02	9.0E-02	1.0E-01	9.1E-02	8.1E-02	4.1E-02	8.0E-01
Toluene	acute 1-hour	37,000	1-hr 9th	4.2E-05	9.5E-05	6.1E-05	5.5E-05	7.8E-05	5.8E-05	4.1E-05	6.3E-05	6.8E-05
Trimethylbenzene	acute 1-hour	5,000	1-hr 9th	4.3E-05	9.6E-05	6.5E-05	5.7E-05	8.2E-05	6.0E-05	4.3E-05	6.6E-05	6.9E-05
Xylenes	acute 1-hour	8,700	1-hr 9th	2.0E-04	4.6E-04	3.2E-04	2.7E-04	3.5E-04	2.8E-04	2.0E-04	3.1E-04	3.2E-04
arsenic	acute 1-hour	0.19	1-hr 9th	3.0E-04	4.8E-04	6.6E-04	3.7E-04	4.0E-04	4.1E-04	3.0E-04	2.9E-04	5.7E-03
beryllium	acute 1-hour	0.25	1-hr 9th	1.6E-05	2.4E-05	3.2E-05	1.8E-05	2.0E-05	2.0E-05	1.6E-05	1.3E-05	2.6E-04
chromium_6	acute 24-hour	1	24-hr MAX	5.8E-05	8.1E-05	6.5E-05	6.5E-05	7.4E-05	6.6E-05	5.9E-05	3.3E-05	2.4E-04
copper	acute 1-hour	100	1-hr 9th	2.7E-06	4.3E-06	5.4E-06	3.1E-06	3.5E-06	3.3E-06	2.7E-06	2.0E-06	4.6E-05
lead	acute 24-hour	0.8	24-hr MAX	1.7E-04	2.6E-04	2.2E-04	2.1E-04	2.3E-04	2.1E-04	1.8E-04	1.2E-04	1.0E-03
mercury	acute 1-hour	1.8	1-hr 9th	3.2E-05	4.2E-05	9.0E-05	4.0E-05	4.2E-05	4.5E-05	3.5E-05	2.1E-05	7.8E-04
nickel	acute 1-hour	6	1-hr 9th	4.0E-04	7.0E-04	4.5E-04	3.9E-04	5.0E-04	4.1E-04	3.5E-04	3.9E-04	1.9E-03
vanadium	acute 24-hour	0.2	24-hr MAX	7.0E-03	9.9E-03	1.1E-02	1.0E-02	9.4E-03	1.1E-02	7.4E-03	3.2E-03	2.0E-02
Mixtures												
Eye irritants	acute	n/a	n/a	3.6E-02	1.1E-02	6.3E-03	6.5E-03	8.5E-03	6.6E-03	1.1E-02	2.2E-02	1.5E-02
Nasal irritants	acute	n/a	n/a	3.6E-02	1.1E-02	6.3E-03	6.5E-03	8.5E-03	6.6E-03	1.1E-02	2.2E-02	1.5E-02
Respiratory irritants	acute	n/a	n/a	3.1E-01	2.9E-01	2.6E-01	1.9E-01	2.2E-01	2.1E-01	2.0E-01	1.3E-01	1.7E+00
Hepato- and renal toxicants	acute	n/a	n/a	3.4E-04	7.7E-04	5.0E-04	4.4E-04	5.9E-04	4.6E-04	3.4E-04	6.1E-04	7.3E-04
Immunotoxicants	acute	n/a	n/a	6.7E-03	4.7E-03	3.1E-03	3.0E-03	3.7E-03	3.0E-03	2.8E-03	3.4E-02	4.8E-03
Neurotoxicants	acute	n/a	n/a	4.1E-03	8.8E-03	5.9E-03	5.2E-03	7.2E-03	5.3E-03	4.0E-03	6.7E-03	8.5E-03
Reproductive/developmental toxicants	acute	n/a	n/a	6.2E-04	1.0E-03	1.1E-03	7.4E-04	8.5E-04	7.9E-04	6.3E-04	5.7E-04	7.8E-03

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Note: Bold values indicate risk quotient values that exceed 1.0, indicating that the air concentration exceeds the compound's exposure limit.

Table 4 Summary of Existing and Approved Case Chronic Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [µg/m ³]	TRV Type	Averaging Period	Existing and Approved Conditions								
					Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs													
NO ₂	chronic	60	RfC	annual	6.2E-02	6.4E-02	3.8E-02	4.3E-02	3.7E-02	4.5E-02	3.8E-02	2.3E-02	6.3E-02
SO ₂	chronic	30	RfC	annual	3.9E-02	5.0E-02	5.6E-02	8.4E-02	4.7E-02	8.4E-02	3.8E-02	3.2E-02	2.2E-01
Carcinogenic PAH group 1	chronic	0.32	RsC	annual	8.8E-06	9.2E-06	1.2E-05	1.7E-05	1.1E-05	2.4E-05	8.5E-06	7.6E-06	9.7E-04
Carcinogenic PAH group 2	chronic	3.2	RsC	annual	5.1E-07	6.3E-07	6.4E-07	8.1E-07	6.4E-07	1.1E-06	5.0E-07	5.3E-07	3.5E-05
Carcinogenic PAH group 3	chronic	10.7	RsC	annual	1.1E-07	8.7E-08	8.6E-08	1.1E-07	9.1E-08	1.5E-07	9.0E-08	5.6E-08	4.4E-06
Napthalenes	chronic	3	RfC	annual	6.3E-05	6.2E-05	6.1E-05	7.9E-05	6.3E-05	1.0E-04	5.5E-05	4.7E-05	3.3E-03
Carbon disulphide group	chronic	100	RfC	annual	1.4E-05	1.8E-05	1.3E-05	1.5E-05	1.5E-05	1.7E-05	1.3E-05	1.5E-05	2.5E-04
H ₂ S	chronic	2	RfC	annual	7.8E-03	3.1E-03	2.8E-03	4.6E-03	3.5E-03	5.7E-03	5.2E-03	1.9E-03	1.3E-01
Aliphatic C17-C34 group	chronic	8,950	RfC	annual	3.0E-06	2.5E-06	1.4E-06	1.4E-06	1.8E-06	1.5E-06	1.3E-06	2.0E-05	6.9E-06
Aliphatic C2-C8 group	chronic	18,400	RfC	annual	5.7E-05	6.5E-05	4.3E-05	4.5E-05	5.1E-05	4.6E-05	4.0E-05	2.1E-04	9.9E-05
Aliphatic C9-C16 group	chronic	200	RfC	annual	1.5E-03	1.8E-03	1.1E-03	1.1E-03	1.4E-03	1.2E-03	1.0E-03	6.4E-03	3.0E-03
Aromatic C9-C16 group (with PAHs)	chronic	200	RfC	annual	2.0E-04	2.7E-04	1.8E-04	1.8E-04	2.2E-04	1.9E-04	1.7E-04	5.3E-04	2.5E-04
Aromatic C17-C34 group (with PAHs)	chronic	130	RfC	annual	2.2E-08	2.5E-08	2.1E-08	2.4E-08	2.3E-08	2.9E-08	2.0E-08	1.9E-08	6.1E-07
Benzene	chronic	1.3	RsC	annual	2.5E-02	9.5E-03	4.2E-03	4.5E-03	5.2E-03	4.5E-03	4.9E-03	2.1E-01	5.3E-03
Ethylbenzene	chronic	1,000	RfC	annual	2.6E-05	4.1E-05	2.8E-05	2.8E-05	3.4E-05	2.8E-05	2.6E-05	4.5E-05	3.1E-05
Ethylene	chronic	8,200	RfC	annual	1.3E-05	2.8E-06	4.9E-07	5.0E-07	5.9E-07	5.1E-07	6.5E-07	1.3E-04	8.2E-07
Formaldehyde	chronic	0.8	RsC	annual	7.5E-02	3.7E-02	2.4E-02	2.8E-02	3.0E-02	2.8E-02	3.6E-02	2.7E-01	5.3E-02
Hexane	chronic	700	RfC	annual	1.8E-04	3.0E-04	2.1E-04	2.1E-04	2.4E-04	2.1E-04	1.8E-04	2.9E-04	3.9E-04
Methyl ethyl ketone group	chronic	5,000	RfC	annual	4.7E-06	2.7E-06	1.4E-06	1.4E-06	1.7E-06	1.4E-06	1.3E-06	3.7E-05	5.0E-06
PM _{2.5}	chronic	12	RfC	annual	5.4E-01	5.5E-01	5.4E-02	5.5E-02	5.4E-02	5.6E-02	4.5E-02	3.9E-02	1.1E-01
Toluene	chronic	5,000	RfC	annual	1.3E-05	1.5E-05	9.8E-06	9.9E-06	1.2E-05	1.0E-05	9.1E-06	5.7E-05	1.3E-05
Trimethylbenzene	chronic	4,400	RfC	annual	1.6E-06	2.2E-06	1.5E-06	1.5E-06	1.8E-06	1.5E-06	1.4E-06	4.2E-06	1.6E-06
Xylenes	chronic	100	RfC	annual	6.3E-04	9.2E-04	6.2E-04	6.1E-04	7.4E-04	6.2E-04	5.6E-04	1.6E-03	6.8E-04
arsenic	chronic	0.0016	RsC	annual	1.7E-03	2.4E-03	2.6E-03	2.9E-03	2.3E-03	3.2E-03	1.8E-03	2.0E-03	1.3E-02
barium	chronic	63	RfC	annual	7.2E-07	9.4E-07	1.1E-06	1.3E-06	9.2E-07	1.5E-06	7.4E-07	6.8E-07	7.2E-06
beryllium	chronic	0.004	RsC	annual	4.5E-05	6.1E-05	6.4E-05	7.3E-05	5.8E-05	7.9E-05	4.6E-05	4.9E-05	3.3E-04
cadmium	chronic	0.006	RsC	annual	3.2E-03	4.5E-03	4.4E-03	4.9E-03	4.0E-03	5.2E-03	3.2E-03	3.3E-03	2.0E-02
chromium	chronic	60	RfC	annual	6.5E-07	9.2E-07	8.1E-07	8.8E-07	8.4E-07	9.3E-07	6.5E-07	7.5E-07	2.9E-06
chromium_6	chronic	0.00013	RsC	annual	3.0E-02	4.2E-02	3.7E-02	4.1E-02	3.9E-02	4.3E-02	3.0E-02	3.5E-02	1.3E-01
cobalt	chronic	0.1	RfC	annual	5.4E-05	8.2E-05	6.6E-05	6.7E-05	7.2E-05	6.9E-05	5.5E-05	8.8E-05	1.4E-04
copper	chronic	1	RfC	annual	1.2E-05	1.7E-05	1.7E-05	2.0E-05	1.6E-05	2.2E-05	1.2E-05	1.3E-05	9.1E-05
lead	chronic	0.5	RfC	annual	1.9E-05	2.7E-05	2.5E-05	2.9E-05	2.4E-05	3.0E-05	1.9E-05	2.2E-05	1.1E-04
manganese	chronic	0.04	RfC	annual	3.8E-04	5.4E-04	4.5E-04	4.8E-04	4.9E-04	5.0E-04	3.8E-04	4.7E-04	1.3E-03
mercury	chronic	0.3	RfC	annual	8.3E-06	1.1E-05	1.3E-05	1.6E-05	1.1E-05	1.7E-05	8.5E-06	7.4E-06	8.8E-05
molybdenum	chronic	12	RfC	annual	1.2E-06	1.7E-06	1.8E-06	2.1E-06	1.6E-06	2.2E-06	1.3E-06	1.3E-06	9.8E-06
nickel	chronic	0.0077	RsC	annual	1.4E-02	1.9E-02	1.8E-02	1.8E-02	1.8E-02	1.8E-02	1.4E-02	1.9E-02	4.1E-02
selenium	chronic	0.7	RfC	annual	1.5E-05	2.3E-05	1.6E-05	1.7E-05	2.0E-05	1.7E-05	1.5E-05	2.1E-05	2.1E-05
vanadium	chronic	0.07	RfC	annual	1.6E-03	1.8E-03	2.5E-03	2.2E-03	1.9E-03	2.3E-03	1.7E-03	1.4E-03	5.0E-03
zinc	chronic	70	RfC	annual	5.8E-06	7.8E-06	8.3E-06	9.6E-06	7.5E-06	1.0E-05	5.9E-06	1.9E-06	4.4E-05
Mixtures													
Nasal irritants	chronic	n/a	n/a	n/a	7.9E-03	3.1E-03	2.9E-03	4.7E-03	3.6E-03	5.8E-03	5.3E-03	1.9E-03	1.3E-01
Respiratory irritants	chronic	n/a	n/a	n/a	1.0E-01	1.2E-01	9.6E-02	1.3E-01	8.6E-02	1.3E-01	7.8E-02	5.7E-02	2.9E-01
Hepatotoxicants	chronic	n/a	n/a	n/a	2.0E-04	2.8E-04	1.9E-04	1.9E-04	2.2E-04	1.9E-04	1.7E-04	5.5E-04	2.6E-04
Renal toxicants	chronic	n/a	n/a	n/a	2.0E-04	2.7E-04	1.9E-04	1.9E-04	2.2E-04	1.9E-04	1.7E-04	5.3E-04	2.6E-04
Neurotoxicants	chronic	n/a	n/a	n/a	3.0E-03	4.0E-03	2.7E-03	2.7E-03	3.2E-03	2.8E-03	2.4E-03	9.6E-03	6.2E-03
Reproductive/developmental toxicants	chronic	n/a	n/a	n/a	5.0E-05	7.0E-05	5.5E-05	5.8E-05	6.0E-05	6.0E-05	4.7E-05	1.0E-04	1.5E-04
Lung carcinogens	chronic	n/a	n/a	n/a	4.9E-02	6.8E-02	6.2E-02	6.6E-02	6.3E-02	7.0E-02	4.9E-02	5.9E-02	2.1E-01

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Table 5 Summary of Project Case Chronic Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [µg/m ³]	TRV Type	Averaging Period	Project Case								
					Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs													
NO ₂	chronic	60	RfC	annual	6.5E-02	6.6E-02	6.4E-02	5.1E-02	4.9E-02	5.4E-02	4.2E-02	2.4E-02	8.5E-02
SO ₂	chronic	30	RfC	annual	4.0E-02	5.1E-02	6.1E-02	9.0E-02	4.9E-02	9.3E-02	4.0E-02	3.3E-02	5.2E-01
Carcinogenic PAH group 1	chronic	0.32	RsC	annual	1.2E-05	1.1E-05	2.8E-05	2.2E-05	1.8E-05	3.0E-05	1.1E-05	7.9E-06	9.8E-04
Carcinogenic PAH group 2	chronic	3.2	RsC	annual	6.1E-07	6.9E-07	1.2E-06	1.0E-06	8.9E-07	1.3E-06	6.0E-07	5.4E-07	3.5E-05
Carcinogenic PAH group 3	chronic	10.7	RsC	annual	1.2E-07	9.4E-08	1.6E-07	1.4E-07	1.2E-07	1.7E-07	1.0E-07	5.8E-08	4.4E-06
Napthalenes	chronic	3	RfC	annual	7.2E-05	6.7E-05	1.2E-04	9.7E-05	8.7E-05	1.2E-04	6.4E-05	4.8E-05	3.3E-03
Carbon disulphide group	chronic	100	RfC	annual	1.4E-05	1.8E-05	1.8E-05	1.6E-05	1.8E-05	1.9E-05	1.4E-05	1.5E-05	4.6E-04
H ₂ S	chronic	2	RfC	annual	8.2E-03	3.2E-03	5.6E-03	5.4E-03	4.6E-03	6.6E-03	5.7E-03	1.9E-03	2.4E-01
Aliphatic C17-C34 group	chronic	8,950	RfC	annual	3.0E-06	2.6E-06	1.5E-06	1.5E-06	1.8E-06	1.5E-06	1.3E-06	2.0E-05	1.1E-05
Aliphatic C2-C8 group	chronic	18,400	RfC	annual	5.8E-05	6.6E-05	5.3E-05	4.8E-05	5.5E-05	5.0E-05	4.1E-05	2.1E-04	1.4E-04
Aliphatic C9-C16 group	chronic	200	RfC	annual	1.5E-03	1.8E-03	1.2E-03	1.2E-03	1.4E-03	1.2E-03	1.1E-03	6.4E-03	4.5E-03
Aromatic C9-C16 group (with PAHs)	chronic	200	RfC	annual	2.0E-04	2.7E-04	1.9E-04	1.8E-04	2.2E-04	1.9E-04	1.7E-04	5.3E-04	2.5E-04
Aromatic C17-C34 group (with PAHs)	chronic	130	RfC	annual	2.4E-08	2.6E-08	3.1E-08	2.8E-08	2.7E-08	3.2E-08	2.1E-08	1.9E-08	6.1E-07
Benzene	chronic	1.3	RsC	annual	2.5E-02	9.5E-03	4.3E-03	4.5E-03	5.2E-03	4.5E-03	4.9E-03	2.1E-01	6.0E-03
Ethylbenzene	chronic	1,000	RfC	annual	2.6E-05	4.1E-05	2.8E-05	2.8E-05	3.4E-05	2.8E-05	2.6E-05	4.5E-05	3.1E-05
Ethylene	chronic	8,200	RfC	annual	1.3E-05	2.8E-06	5.0E-07	5.1E-07	5.9E-07	5.1E-07	6.5E-07	1.3E-04	1.1E-06
Formaldehyde	chronic	0.8	RsC	annual	7.5E-02	3.7E-02	2.5E-02	2.8E-02	3.1E-02	2.9E-02	3.6E-02	2.7E-01	5.4E-02
Hexane	chronic	700	RfC	annual	1.8E-04	3.1E-04	2.4E-04	2.2E-04	2.6E-04	2.3E-04	1.8E-04	2.9E-04	5.1E-04
Methyl ethyl ketone group	chronic	5,000	RfC	annual	4.7E-06	2.7E-06	1.4E-06	1.4E-06	1.7E-06	1.5E-06	1.3E-06	3.7E-05	8.1E-06
PM _{2.5}	chronic	12	RfC	annual	5.4E-01	5.5E-01	6.9E-02	6.1E-02	6.2E-02	6.3E-02	4.9E-02	3.9E-02	1.3E-01
Toluene	chronic	5,000	RfC	annual	1.3E-05	1.5E-05	9.9E-06	9.9E-06	1.2E-05	1.0E-05	9.1E-06	5.7E-05	1.6E-05
Trimethylbenzene	chronic	4,400	RfC	annual	1.6E-06	2.2E-06	1.5E-06	1.5E-06	1.8E-06	1.5E-06	1.4E-06	4.2E-06	1.6E-06
Xylenes	chronic	100	RfC	annual	6.3E-04	9.2E-04	6.2E-04	6.1E-04	7.4E-04	6.2E-04	5.6E-04	1.6E-03	6.9E-04
arsenic	chronic	0.0016	RsC	annual	2.1E-03	2.6E-03	5.0E-03	3.6E-03	3.3E-03	4.0E-03	2.2E-03	2.1E-03	2.2E-02
barium	chronic	63	RfC	annual	9.0E-07	1.1E-06	2.5E-06	1.7E-06	1.5E-06	1.9E-06	9.4E-07	7.1E-07	1.2E-05
beryllium	chronic	0.004	RsC	annual	5.3E-05	6.7E-05	1.2E-04	9.0E-05	8.3E-05	9.8E-05	5.5E-05	5.0E-05	5.3E-04
cadmium	chronic	0.006	RsC	annual	3.7E-03	4.8E-03	8.0E-03	6.0E-03	5.5E-03	6.4E-03	3.8E-03	3.4E-03	3.3E-02
chromium	chronic	60	RfC	annual	7.2E-07	9.6E-07	1.3E-06	1.0E-06	1.0E-06	1.1E-06	7.2E-07	7.6E-07	4.5E-06
chromium_6	chronic	0.00013	RsC	annual	3.3E-02	4.5E-02	5.8E-02	4.7E-02	4.8E-02	5.0E-02	3.3E-02	3.5E-02	2.1E-01
cobalt	chronic	0.1	RfC	annual	5.7E-05	8.4E-05	8.2E-05	7.2E-05	7.9E-05	7.5E-05	5.8E-05	8.8E-05	2.0E-04
copper	chronic	1	RfC	annual	1.4E-05	1.8E-05	3.4E-05	2.5E-05	2.3E-05	2.7E-05	1.5E-05	1.3E-05	1.5E-04
lead	chronic	0.5	RfC	annual	2.2E-05	2.9E-05	4.5E-05	3.4E-05	3.3E-05	3.7E-05	2.2E-05	2.2E-05	1.8E-04
manganese	chronic	0.04	RfC	annual	4.0E-04	5.6E-04	6.3E-04	5.3E-04	5.7E-04	5.6E-04	4.0E-04	4.8E-04	2.0E-03
mercury	chronic	0.3	RfC	annual	1.1E-05	1.2E-05	3.0E-05	2.1E-05	1.8E-05	2.3E-05	1.1E-05	7.9E-06	1.5E-04
molybdenum	chronic	12	RfC	annual	1.5E-06	1.9E-06	3.6E-06	2.6E-06	2.3E-06	2.8E-06	1.5E-06	1.3E-06	1.6E-05
nickel	chronic	0.0077	RsC	annual	1.4E-02	1.9E-02	2.3E-02	1.9E-02	2.0E-02	2.0E-02	1.5E-02	1.9E-02	6.0E-02
selenium	chronic	0.7	RfC	annual	1.6E-05	2.3E-05	1.7E-05	1.7E-05	2.1E-05	1.7E-05	1.5E-05	2.1E-05	2.4E-05
vanadium	chronic	0.07	RfC	annual	1.7E-03	1.9E-03	3.1E-03	2.4E-03	2.2E-03	2.5E-03	1.8E-03	1.4E-03	7.1E-03
zinc	chronic	70	RfC	annual	6.9E-06	8.6E-06	1.6E-05	1.2E-05	1.1E-05	1.3E-05	7.1E-06	6.1E-06	7.3E-05
Mixtures													
Nasal irritants	chronic	n/a	n/a	n/a	8.3E-03	3.3E-03	5.7E-03	5.5E-03	4.7E-03	6.8E-03	5.8E-03	2.0E-03	2.4E-01
Respiratory irritants	chronic	n/a	n/a	n/a	1.1E-01	1.2E-01	1.3E-01	1.4E-01	1.0E-01	1.5E-01	8.3E-02	5.8E-02	6.1E-01
Hepatotoxicants	chronic	n/a	n/a	n/a	2.0E-04	2.8E-04	1.9E-04	1.9E-04	2.2E-04	1.9E-04	1.7E-04	5.5E-04	2.7E-04
Renal toxicants	chronic	n/a	n/a	n/a	2.0E-04	2.7E-04	1.9E-04	1.9E-04	2.2E-04	1.9E-04	1.7E-04	5.3E-04	2.7E-04
Neurotoxicants	chronic	n/a	n/a	n/a	3.0E-03	4.0E-03	3.0E-03	2.8E-03	3.3E-03	2.9E-03	2.5E-03	9.6E-03	8.9E-03
Reproductive/developmental toxicants	chronic	n/a	n/a	n/a	5.3E-05	7.2E-05	7.5E-05	6.4E-05	6.8E-05	6.7E-05	4.9E-05	1.0E-04	2.2E-04
Lung carcinogens	chronic	n/a	n/a	n/a	5.3E-02	7.1E-02	9.5E-02	7.6E-02	7.7E-02	8.1E-02	5.4E-02	6.0E-02	3.2E-01

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Table 6 Summary of Planned Development Case Chronic Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [µg/m ³]	TRV Type	Averaging Period	Planned Development Case								
					Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs													
NO ₂	chronic	60	RfC	annual	7.9E-02	8.5E-02	7.5E-02	6.5E-02	6.6E-02	6.7E-02	5.5E-02	3.3E-02	1.0E-01
SO ₂	chronic	30	RfC	annual	4.5E-02	6.0E-02	6.0E-02	7.3E-02	5.6E-02	7.7E-02	4.5E-02	3.9E-02	5.2E-01
Carcinogenic PAH group 1	chronic	0.32	RsC	annual	2.1E-05	2.7E-05	3.9E-05	3.2E-05	3.1E-05	4.0E-05	2.0E-05	1.7E-05	9.9E-04
Carcinogenic PAH group 2	chronic	3.2	RsC	annual	1.0E-06	1.4E-06	1.7E-06	1.4E-06	1.4E-06	1.7E-06	9.9E-07	9.6E-07	3.6E-05
Carcinogenic PAH group 3	chronic	10.7	RsC	annual	1.7E-07	1.7E-07	2.1E-07	1.9E-07	1.8E-07	2.2E-07	1.5E-07	1.0E-07	4.4E-06
Napthalenes	chronic	3	RfC	annual	1.1E-04	1.3E-04	1.6E-04	1.4E-04	1.4E-04	1.6E-04	1.0E-04	8.6E-05	3.3E-03
Carbon disulphide group	chronic	100	RfC	annual	1.8E-05	2.4E-05	2.1E-05	2.0E-05	2.2E-05	2.3E-05	1.7E-05	1.9E-05	4.6E-04
H ₂ S	chronic	2	RfC	annual	9.1E-03	4.3E-03	6.3E-03	6.2E-03	5.8E-03	7.4E-03	6.6E-03	2.2E-03	2.4E-01
Aliphatic C17-C34 group	chronic	8,950	RfC	annual	4.4E-06	4.2E-06	2.5E-06	2.7E-06	3.5E-06	2.7E-06	2.6E-06	2.0E-05	1.3E-05
Aliphatic C2-C8 group	chronic	18,400	RfC	annual	7.7E-05	9.4E-05	7.3E-05	6.9E-05	8.0E-05	7.0E-05	6.1E-05	2.4E-04	1.7E-04
Aliphatic C9-C16 group	chronic	200	RfC	annual	2.3E-03	2.9E-03	1.9E-03	1.9E-03	2.4E-03	2.0E-03	1.8E-03	7.1E-03	5.5E-03
Aromatic C9-C16 group (with PAHs)	chronic	200	RfC	annual	2.6E-04	3.6E-04	2.5E-04	2.5E-04	3.0E-04	2.5E-04	2.3E-04	6.3E-04	3.2E-04
Aromatic C17-C34 group (with PAHs)	chronic	130	RfC	annual	3.3E-08	4.1E-08	4.1E-08	3.8E-08	4.0E-08	4.3E-08	3.1E-08	3.1E-08	6.2E-07
Benzene	chronic	1.3	RsC	annual	2.8E-02	1.2E-02	6.1E-03	6.6E-03	8.1E-03	6.6E-03	7.2E-03	2.1E-01	8.9E-03
Ethylbenzene	chronic	1,000	RfC	annual	3.2E-05	5.0E-05	3.5E-05	3.5E-05	4.2E-05	3.5E-05	3.2E-05	5.5E-05	3.8E-05
Ethylene	chronic	8,200	RfC	annual	1.3E-05	3.0E-06	6.7E-07	6.9E-07	8.3E-07	7.0E-07	8.3E-07	1.3E-04	1.3E-06
Formaldehyde	chronic	0.8	RsC	annual	8.0E-02	4.4E-02	3.0E-02	3.3E-02	3.7E-02	3.4E-02	4.1E-02	2.8E-01	5.9E-02
Hexane	chronic	700	RfC	annual	2.7E-04	4.3E-04	3.3E-04	3.1E-04	3.7E-04	3.2E-04	2.7E-04	4.1E-04	6.1E-04
Methyl ethyl ketone group	chronic	5,000	RfC	annual	5.8E-06	4.0E-06	2.2E-06	2.3E-06	3.0E-06	2.4E-06	2.3E-06	3.8E-05	9.4E-06
PM _{2.5}	chronic	12	RfC	annual	5.6E-01	5.7E-01	8.5E-02	7.8E-02	8.2E-02	8.0E-02	6.5E-02	5.1E-02	1.5E-01
Toluene	chronic	5,000	RfC	annual	1.9E-05	2.3E-05	1.5E-05	1.5E-05	1.9E-05	1.6E-05	1.4E-05	6.5E-05	2.2E-05
Trimethylbenzene	chronic	4,400	RfC	annual	2.3E-06	3.4E-06	2.3E-06	2.3E-06	2.8E-06	2.3E-06	2.1E-06	5.6E-06	2.5E-06
Xylenes	chronic	100	RfC	annual	8.2E-04	1.2E-03	8.3E-04	8.2E-04	9.9E-04	8.4E-04	7.6E-04	1.9E-03	9.2E-04
arsenic	chronic	0.0016	RsC	annual	3.1E-03	3.9E-03	5.9E-03	4.7E-03	4.6E-03	5.0E-03	3.2E-03	2.6E-03	2.3E-02
barium	chronic	63	RfC	annual	1.5E-06	1.8E-06	3.0E-06	2.3E-06	2.2E-06	2.5E-06	1.5E-06	9.9E-07	1.3E-05
beryllium	chronic	0.004	RsC	annual	7.8E-05	9.8E-05	1.4E-04	1.2E-04	1.1E-04	1.2E-04	8.1E-05	6.2E-05	5.6E-04
cadmium	chronic	0.006	RsC	annual	5.9E-03	8.0E-03	1.0E-02	8.3E-03	8.4E-03	8.7E-03	6.1E-03	5.3E-03	3.6E-02
chromium	chronic	60	RfC	annual	9.2E-07	1.2E-06	1.4E-06	1.2E-06	1.3E-06	1.3E-06	9.4E-07	8.8E-07	4.7E-06
chromium_6	chronic	0.00013	RsC	annual	4.3E-02	5.7E-02	6.7E-02	5.7E-02	6.0E-02	5.9E-02	4.3E-02	4.0E-02	2.2E-01
cobalt	chronic	0.1	RfC	annual	7.1E-05	1.1E-04	9.6E-05	8.7E-05	9.7E-05	9.0E-05	7.2E-05	1.0E-04	2.2E-04
copper	chronic	1	RfC	annual	2.2E-05	2.8E-05	4.1E-05	3.3E-05	3.2E-05	3.5E-05	2.3E-05	1.8E-05	1.6E-04
lead	chronic	0.5	RfC	annual	3.2E-05	4.1E-05	5.4E-05	4.4E-05	4.5E-05	4.7E-05	3.2E-05	2.8E-05	1.9E-04
manganese	chronic	0.04	RfC	annual	5.0E-04	6.9E-04	7.2E-04	6.3E-04	6.9E-04	6.6E-04	5.0E-04	5.4E-04	2.1E-03
mercury	chronic	0.3	RfC	annual	1.8E-05	2.1E-05	3.6E-05	2.8E-05	2.7E-05	3.0E-05	1.9E-05	1.1E-05	1.6E-04
molybdenum	chronic	12	RfC	annual	2.3E-06	2.8E-06	4.2E-06	3.4E-06	3.3E-06	3.6E-06	2.3E-06	1.7E-06	1.7E-05
nickel	chronic	0.0077	RsC	annual	1.9E-02	2.7E-02	2.7E-02	2.4E-02	2.6E-02	2.5E-02	1.9E-02	2.2E-02	6.5E-02
selenium	chronic	0.7	RfC	annual	1.6E-05	2.3E-05	1.7E-05	1.7E-05	2.1E-05	1.7E-05	1.6E-05	2.1E-05	2.4E-05
vanadium	chronic	0.07	RfC	annual	2.4E-03	3.2E-03	3.8E-03	3.2E-03	3.2E-03	3.3E-03	2.4E-03	1.9E-03	8.0E-03
zinc	chronic	70	RfC	annual	1.0E-05	1.3E-05	1.9E-05	1.6E-05	1.5E-05	1.6E-05	1.1E-05	7.9E-06	7.7E-05
Mixtures													
Nasal irritants	chronic	n/a	n/a	n/a	9.2E-03	4.5E-03	6.4E-03	6.4E-03	5.9E-03	7.6E-03	6.7E-03	2.3E-03	2.4E-01
Respiratory irritants	chronic	n/a	n/a	n/a	1.3E-01	1.5E-01	1.4E-01	1.4E-01	1.3E-01	1.5E-01	1.0E-01	7.4E-02	6.3E-01
Hepatotoxicants	chronic	n/a	n/a	n/a	2.6E-04	3.7E-04	2.5E-04	2.5E-04	3.0E-04	2.6E-04	2.3E-04	6.5E-04	3.4E-04
Renal toxicants	chronic	n/a	n/a	n/a	2.6E-04	3.7E-04	2.5E-04	2.5E-04	3.0E-04	2.6E-04	2.3E-04	6.3E-04	3.4E-04
Neurotoxicants	chronic	n/a	n/a	n/a	4.3E-03	5.8E-03	4.2E-03	4.1E-03	4.9E-03	4.2E-03	3.7E-03	1.1E-02	1.0E-02
Reproductive/developmental toxicants	chronic	n/a	n/a	n/a	7.0E-05	9.6E-05	9.1E-05	8.1E-05	9.0E-05	8.4E-05	6.7E-05	1.2E-04	2.4E-04
Lung carcinogens	chronic	n/a	n/a	n/a	7.0E-02	9.6E-02	1.1E-01	9.4E-02	9.9E-02	9.8E-02	7.1E-02	7.0E-02	3.4E-01

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Table 7 Summary of Project Only Chronic Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [µg/m ³]	TRV Type	Averaging Period	Project Only (Incremental Change)									
					Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence	
Criteria Pollutants/ VOCs														
NO ₂	chronic	60	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SO ₂	chronic	30	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carcinogenic PAH group 1	chronic	0.32	RsC	annual	2.8E-06	1.6E-06	1.6E-05	5.3E-06	7.0E-06	5.6E-06	2.8E-06	3.6E-07	6.5E-06	
Carcinogenic PAH group 2	chronic	3.2	RsC	annual	9.9E-08	5.8E-08	5.9E-07	1.9E-07	2.5E-07	2.0E-07	9.9E-08	1.3E-08	2.3E-07	
Carcinogenic PAH group 3	chronic	10.7	RsC	annual	1.2E-08	7.2E-09	7.3E-08	2.3E-08	3.1E-08	2.5E-08	1.2E-08	1.6E-09	2.9E-08	
Napthalenes	chronic	3	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carbon disulphide group	chronic	100	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
H ₂ S	chronic	2	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aliphatic C17-C34 group	chronic	8,950	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aliphatic C2-C8 group	chronic	18,400	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aliphatic C9-C16 group	chronic	200	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aromatic C9-C16 group (with PAHs)	chronic	200	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aromatic C17-C34 group (with PAHs)	chronic	130	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Benzene	chronic	1.3	RsC	annual	6.0E-06	4.2E-06	4.2E-05	1.2E-05	1.8E-05	1.4E-05	6.7E-06	1.1E-06	6.9E-04	
Ethylbenzene	chronic	1,000	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ethylene	chronic	8,200	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Formaldehyde	chronic	0.8	RsC	annual	1.9E-04	1.4E-04	1.3E-03	4.0E-04	5.6E-04	4.4E-04	2.1E-04	4.0E-05	5.5E-04	
Hexane	chronic	700	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Methyl ethyl ketone group	chronic	5,000	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PM _{2.5}	chronic	12	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Toluene	chronic	5,000	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Trimethylbenzene	chronic	4,400	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Xylenes	chronic	100	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
arsenic	chronic	0.0016	RsC	annual	3.3E-04	2.5E-04	2.4E-03	7.2E-04	1.0E-03	8.0E-04	3.7E-04	6.3E-05	8.5E-03	
barium	chronic	63	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
beryllium	chronic	0.004	RsC	annual	7.9E-06	5.9E-06	5.9E-05	1.7E-05	2.5E-05	1.9E-05	8.8E-06	1.5E-06	2.0E-04	
cadmium	chronic	0.006	RsC	annual	4.8E-04	3.6E-04	3.6E-03	1.1E-03	1.5E-03	1.2E-03	5.4E-04	9.3E-05	1.2E-02	
chromium	chronic	60	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
chromium_6	chronic	0.00013	RsC	annual	2.8E-03	2.1E-03	2.1E-02	6.2E-03	8.8E-03	6.9E-03	3.2E-03	5.5E-04	7.4E-02	
cobalt	chronic	0.1	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
copper	chronic	1	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
lead	chronic	0.5	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
manganese	chronic	0.04	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
mercury	chronic	0.3	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
molybdenum	chronic	12	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
nickel	chronic	0.0077	RsC	annual	7.2E-04	5.4E-04	5.3E-03	1.6E-03	2.2E-03	1.7E-03	8.0E-04	1.4E-04	1.8E-02	
selenium	chronic	0.7	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
vanadium	chronic	0.07	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
zinc	chronic	70	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mixtures														
Nasal irritants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Respiratory irritants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hepatotoxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Renal toxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Neurotoxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Reproductive/developmental toxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lung carcinogens	chronic	n/a	n/a	n/a	4.4E-03	3.3E-03	3.3E-02	9.5E-03	1.4E-02	1.1E-02	4.9E-03	8.4E-04	1.1E-01	

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Table 8 Summary of Future Emission Sources Chronic Risk Quotients [Unitless]

Chemical	TRV Averaging Time	TRV [$\mu\text{g}/\text{m}^3$]	TRV Type	Averaging Period	Future Emission Sources (Incremental Change)									
					Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence	
Criteria Pollutants/ VOCs														
NO ₂	chronic	60	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SO ₂	chronic	30	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carcinogenic PAH group 1	chronic	0.32	RsC	annual	1.2E-05	1.8E-05	2.7E-05	1.6E-05	2.0E-05	1.6E-05	1.2E-05	9.3E-06	1.8E-05	
Carcinogenic PAH group 2	chronic	3.2	RsC	annual	4.9E-07	7.3E-07	1.0E-06	6.2E-07	7.9E-07	6.5E-07	4.9E-07	4.3E-07	7.1E-07	
Carcinogenic PAH group 3	chronic	10.7	RsC	annual	5.7E-08	8.4E-08	1.2E-07	7.3E-08	9.4E-08	7.6E-08	5.7E-08	4.7E-08	8.4E-08	
Napthalenes	chronic	3	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carbon disulphide group	chronic	100	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
H ₂ S	chronic	2	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aliphatic C17-C34 group	chronic	8,950	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aliphatic C2-C8 group	chronic	18,400	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aliphatic C9-C16 group	chronic	200	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aromatic C9-C16 group (with PAHs)	chronic	200	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Aromatic C17-C34 group (with PAHs)	chronic	130	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Benzene	chronic	1.3	RsC	annual	2.4E-03	2.8E-03	1.8E-03	2.1E-03	2.9E-03	2.1E-03	2.2E-03	1.5E-03	3.6E-03	
Ethylbenzene	chronic	1,000	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ethylene	chronic	8,200	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Formaldehyde	chronic	0.8	RsC	annual	4.8E-03	7.0E-03	6.0E-03	5.4E-03	6.5E-03	5.4E-03	4.8E-03	5.9E-03	5.8E-03	
Hexane	chronic	700	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Methyl ethyl ketone group	chronic	5,000	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PM _{2.5}	chronic	12	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Toluene	chronic	5,000	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Trimethylbenzene	chronic	4,400	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Xylenes	chronic	100	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
arsenic	chronic	0.0016	RsC	annual	1.4E-03	1.6E-03	3.3E-03	1.8E-03	2.3E-03	1.8E-03	1.4E-03	5.7E-04	9.8E-03	
barium	chronic	63	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
beryllium	chronic	0.004	RsC	annual	3.3E-05	3.7E-05	8.0E-05	4.3E-05	5.6E-05	4.4E-05	3.5E-05	1.4E-05	2.4E-04	
cadmium	chronic	0.006	RsC	annual	2.8E-03	3.5E-03	5.7E-03	3.4E-03	4.4E-03	3.5E-03	2.9E-03	1.9E-03	1.5E-02	
chromium	chronic	60	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
chromium_6	chronic	0.00013	RsC	annual	1.2E-02	1.4E-02	2.9E-02	1.6E-02	2.1E-02	1.6E-02	1.3E-02	5.7E-03	8.6E-02	
cobalt	chronic	0.1	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
copper	chronic	1	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
lead	chronic	0.5	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
manganese	chronic	0.04	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
mercury	chronic	0.3	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
molybdenum	chronic	12	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
nickel	chronic	0.0077	RsC	annual	4.8E-03	7.9E-03	9.3E-03	6.0E-03	8.3E-03	6.2E-03	4.9E-03	3.2E-03	2.4E-02	
selenium	chronic	0.7	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
vanadium	chronic	0.07	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
zinc	chronic	70	RfC	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mixtures														
Nasal irritants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Respiratory irritants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hepatotoxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Renal toxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Neurotoxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Reproductive/developmental toxicants	chronic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lung carcinogens	chronic	n/a	n/a	n/a	2.1E-02	2.7E-02	4.8E-02	2.7E-02	3.6E-02	2.8E-02	2.2E-02	1.1E-02	1.4E-01	

n/a = Not applicable; TRV = Toxicity Reference Value; VOC = Volatile Organic Compounds.

Table 9 Summary of Baseline Acute Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Existing and Approved Conditions								
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs										
Aliphatic C2-C8 group	1-hr 9th	1.7E+01	4.0E+01	2.5E+01	2.3E+01	3.3E+01	2.4E+01	1.7E+01	3.7E+01	3.1E+01
Aliphatic C9-C16 group	1-hr 9th	4.5E+00	1.0E+01	6.9E+00	5.9E+00	8.4E+00	6.3E+00	4.7E+00	8.0E+00	8.4E+00
Aromatic C9-C16 group (with PAHs)	1-hr 9th	8.4E-01	1.9E+00	1.3E+00	1.1E+00	1.4E+00	1.1E+00	8.3E-01	1.3E+00	1.4E+00
Benzene	24-hr MAX	1.9E-01	1.1E-01	6.2E-02	5.9E-02	7.6E-02	6.1E-02	5.3E-02	1.0E+00	6.7E-02
CO	1-hr 9th	2.8E+02	4.0E+02	3.4E+01	3.5E+01	4.3E+01	3.7E+01	4.1E+01	2.7E+01	1.7E+02
CO	8-hr MAX	1.6E+02	2.6E+02	3.4E+01	2.8E+01	4.3E+01	3.0E+01	2.7E+01	2.7E+01	1.3E+02
Carbon disulphide group	1-hr 9th	2.5E-02	5.0E-02	3.3E-02	3.1E-02	4.2E-02	3.5E-02	2.5E-02	3.0E-02	4.9E-01
Ethylbenzene	24-hr MAX	4.4E-01	8.3E-01	4.4E-01	4.7E-01	6.3E-01	4.7E-01	4.4E-01	5.7E-01	5.7E-01
Formaldehyde	1-hr 9th	1.8E+00	4.4E-01	2.4E-01	2.6E-01	3.4E-01	2.8E-01	5.5E-01	1.1E+00	6.9E-01
Hexane	1-hr 9th	3.5E+00	8.9E+00	5.7E+00	5.1E+00	7.1E+00	5.2E+00	3.5E+00	8.5E+00	6.6E+00
H ₂ S	1-hr 9th	4.6E-01	1.3E-01	8.9E-02	1.6E-01	1.2E-01	2.9E-01	2.3E-01	8.7E-02	5.2E+00
Methyl ethyl ketone group	1-hr 9th	2.6E-01	3.0E-01	2.0E-01	1.9E-01	2.3E-01	1.9E-01	1.4E-01	9.5E-01	3.8E-01
Napthalenes	1-hr 9th	4.1E-03	3.8E-03	2.5E-03	5.5E-03	3.4E-03	8.9E-03	2.1E-03	2.3E-03	1.5E-01
NO ₂	1-hr 9th	8.4E+01	5.7E+01	2.1E+01	2.7E+01	3.0E+01	3.1E+01	3.7E+01	1.9E+01	8.5E+01
NO ₂	24-hr MAX	3.1E+01	2.5E+01	1.2E+01	1.2E+01	1.5E+01	1.2E+01	1.3E+01	1.2E+01	4.2E+01
PM _{2.5}	24-hr 98th	9.4E+00	9.8E+00	3.6E+00	3.6E+00	3.9E+00	3.9E+00	3.4E+00	2.5E+00	5.9E+00
SO ₂	1-hr 9th	1.7E+01	2.6E+01	1.8E+01	6.1E+01	2.3E+01	4.6E+01	2.0E+01	1.4E+01	2.8E+02
SO ₂	1-hr 9th	1.7E+01	2.6E+01	1.8E+01	6.1E+01	2.3E+01	4.6E+01	2.0E+01	1.4E+01	2.8E+02
SO ₂	24-hr MAX	9.3E+00	1.3E+01	1.0E+01	2.0E+01	1.2E+01	2.4E+01	9.5E+00	5.0E+00	6.6E+01
Toluene	1-hr 9th	1.1E+00	2.6E+00	1.8E+00	1.5E+00	2.2E+00	1.5E+00	1.1E+00	2.0E+00	1.8E+00
Trimethylbenzene	1-hr 9th	1.5E-01	3.6E-01	2.5E-01	2.1E-01	3.1E-01	2.2E-01	1.6E-01	2.5E-01	2.5E-01
Xylenes	1-hr 9th	1.4E+00	3.2E+00	2.1E+00	1.8E+00	2.5E+00	1.9E+00	1.4E+00	2.2E+00	2.2E+00
arsenic	1-hr 9th	4.8E-05	7.6E-05	5.2E-05	6.5E-05	6.4E-05	6.8E-05	4.3E-05	5.1E-05	3.9E-04
beryllium	1-hr 9th	3.4E-06	5.4E-06	3.6E-06	4.0E-06	4.3E-06	4.2E-06	3.2E-06	3.2E-06	2.3E-05
chromium_6	24-hr MAX	4.7E-05	7.3E-05	5.1E-05	5.3E-05	6.4E-05	5.3E-05	4.8E-05	3.1E-05	1.2E-04
copper	1-hr 9th	2.0E-04	3.3E-04	2.2E-04	2.6E-04	2.8E-04	2.7E-04	1.9E-04	1.7E-04	1.7E-03
lead	24-hr MAX	9.7E-05	1.6E-04	1.2E-04	1.2E-04	1.4E-04	1.2E-04	1.0E-04	7.9E-05	4.2E-04
mercury	1-hr 9th	3.6E-05	5.7E-05	3.9E-05	7.5E-05	5.1E-05	8.0E-05	3.4E-05	3.3E-05	5.0E-04
nickel	1-hr 9th	2.0E-03	3.4E-03	2.3E-03	2.1E-03	2.8E-03	2.2E-03	1.9E-03	2.3E-03	4.3E-03
vanadium	24-hr MAX	1.3E-03	1.2E-03	2.0E-03	2.0E-03	1.5E-03	2.0E-03	1.4E-03	5.9E-04	2.8E-03

VOC = Volatile Organic Compounds.

Table 10 Summary of Project Case Acute Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Project Case								
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs										
Aliphatic C2-C8 group	1-hr 9th	1.7E+01	4.0E+01	2.6E+01	2.4E+01	3.3E+01	2.4E+01	1.7E+01	3.7E+01	4.9E+01
Aliphatic C9-C16 group	1-hr 9th	4.5E+00	1.0E+01	6.9E+00	5.9E+00	8.4E+00	6.3E+00	4.7E+00	8.0E+00	1.1E+01
Aromatic C9-C16 group (with PAHs)	1-hr 9th	8.4E-01	1.9E+00	1.3E+00	1.1E+00	1.4E+00	1.1E+00	8.3E-01	1.3E+00	1.4E+00
Benzene	24-hr MAX	1.9E-01	1.1E-01	6.2E-02	5.9E-02	7.6E-02	6.1E-02	5.3E-02	1.0E+00	6.9E-02
CO	1-hr 9th	2.8E+02	4.0E+02	6.0E+01	3.8E+01	4.4E+01	4.0E+01	4.2E+01	2.7E+01	4.6E+02
CO	8-hr MAX	1.7E+02	2.6E+02	4.3E+01	3.1E+01	4.3E+01	3.3E+01	2.8E+01	2.7E+01	3.7E+02
Carbon disulphide group	1-hr 9th	2.5E-02	5.0E-02	3.8E-02	3.2E-02	4.2E-02	3.6E-02	2.5E-02	3.0E-02	7.0E-01
Ethylbenzene	24-hr MAX	4.4E-01	8.3E-01	4.4E-01	4.7E-01	6.3E-01	4.7E-01	4.4E-01	5.7E-01	5.7E-01
Formaldehyde	1-hr 9th	1.8E+00	4.4E-01	2.5E-01	2.7E-01	3.4E-01	2.8E-01	5.5E-01	1.1E+00	7.3E-01
Hexane	1-hr 9th	3.5E+00	8.9E+00	5.8E+00	5.2E+00	7.1E+00	5.3E+00	3.5E+00	8.5E+00	8.1E+00
H ₂ S	1-hr 9th	4.6E-01	1.3E-01	3.3E-01	1.7E-01	1.4E-01	3.1E-01	2.3E-01	8.7E-02	7.5E+00
Methyl ethyl ketone group	1-hr 9th	2.6E-01	3.0E-01	2.0E-01	1.9E-01	2.3E-01	1.9E-01	1.4E-01	9.5E-01	5.3E-01
Napthalenes	1-hr 9th	4.1E-03	3.8E-03	5.6E-03	5.5E-03	3.7E-03	9.0E-03	2.2E-03	2.3E-03	1.5E-01
NO ₂	1-hr 9th	8.4E+01	5.7E+01	5.4E+01	3.0E+01	3.1E+01	3.2E+01	3.7E+01	1.9E+01	1.6E+02
NO ₂	24-hr MAX	3.1E+01	2.5E+01	1.8E+01	1.3E+01	1.5E+01	1.3E+01	1.3E+01	1.2E+01	4.5E+01
PM _{2.5}	24-hr 98th	9.6E+00	1.0E+01	4.2E+00	3.9E+00	4.4E+00	4.1E+00	3.7E+00	2.5E+00	9.9E+00
SO ₂	1-hr 9th	1.8E+01	2.6E+01	1.9E+01	6.1E+01	2.5E+01	4.6E+01	2.1E+01	1.4E+01	4.2E+02
SO ₂	24-hr MAX	9.9E+00	1.3E+01	1.1E+01	2.0E+01	1.2E+01	2.4E+01	9.9E+00	5.0E+00	1.2E+02
Toluene	1-hr 9th	1.1E+00	2.6E+00	1.8E+00	1.5E+00	2.2E+00	1.5E+00	1.1E+00	2.0E+00	1.8E+00
Trimethylbenzene	1-hr 9th	1.5E-01	3.6E-01	2.5E-01	2.1E-01	3.1E-01	2.2E-01	1.6E-01	2.5E-01	2.5E-01
Xylenes	1-hr 9th	1.4E+00	3.2E+00	2.1E+00	1.8E+00	2.5E+00	1.9E+00	1.4E+00	2.2E+00	2.2E+00
arsenic	1-hr 9th	4.8E-05	7.7E-05	1.2E-04	6.9E-05	6.8E-05	7.5E-05	4.6E-05	5.1E-05	1.1E-03
beryllium	1-hr 9th	3.4E-06	5.4E-06	7.2E-06	4.3E-06	4.3E-06	4.6E-06	3.3E-06	3.2E-06	6.5E-05
chromium_6	24-hr MAX	4.8E-05	7.3E-05	5.7E-05	5.5E-05	6.4E-05	5.6E-05	4.8E-05	3.1E-05	2.3E-04
copper	1-hr 9th	2.0E-04	3.4E-04	5.0E-04	2.8E-04	2.9E-04	3.0E-04	2.0E-04	1.7E-04	4.6E-03
lead	24-hr MAX	9.8E-05	1.6E-04	1.4E-04	1.2E-04	1.4E-04	1.3E-04	1.0E-04	7.9E-05	8.2E-04
mercury	1-hr 9th	4.0E-05	5.8E-05	1.5E-04	8.0E-05	6.4E-05	8.6E-05	4.5E-05	3.3E-05	1.4E-03
nickel	1-hr 9th	2.0E-03	3.4E-03	2.4E-03	2.1E-03	2.8E-03	2.2E-03	1.9E-03	2.3E-03	1.2E-02
vanadium	24-hr MAX	1.4E-03	1.2E-03	2.1E-03	2.1E-03	1.6E-03	2.1E-03	1.4E-03	5.9E-04	3.9E-03

VOC = Volatile Organic Compounds.

Table 11 Summary of Planned Development Case Acute Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Planned Development Case								
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs										
Aliphatic C2-C8 group	1-hr 9th	2.2E+01	5.1E+01	3.3E+01	2.9E+01	4.0E+01	3.1E+01	2.2E+01	4.3E+01	5.3E+01
Aliphatic C9-C16 group	1-hr 9th	6.3E+00	1.3E+01	8.8E+00	7.5E+00	1.1E+01	7.6E+00	6.3E+00	9.1E+00	1.2E+01
Aromatic C9-C16 group (with PAHs)	1-hr 9th	1.1E+00	2.4E+00	1.5E+00	1.4E+00	1.7E+00	1.4E+00	1.1E+00	1.6E+00	1.8E+00
Benzene	24-hr MAX	1.9E-01	1.2E-01	8.0E-02	7.7E-02	9.6E-02	7.9E-02	7.3E-02	1.0E+00	8.6E-02
CO	1-hr 9th	2.8E+02	4.0E+02	6.2E+01	4.2E+01	4.8E+01	4.6E+01	4.4E+01	3.0E+01	4.6E+02
CO	8-hr MAX	1.7E+02	2.6E+02	4.9E+01	3.6E+01	5.0E+01	3.8E+01	3.3E+01	3.1E+01	3.7E+02
Carbon disulphide group	1-hr 9th	3.0E-02	5.9E-02	4.2E-02	3.8E-02	4.7E-02	4.2E-02	3.1E-02	3.4E-02	7.0E-01
Ethylbenzene	24-hr MAX	5.0E-01	9.1E-01	4.9E-01	5.2E-01	7.0E-01	5.3E-01	5.0E-01	6.0E-01	6.4E-01
Formaldehyde	1-hr 9th	1.8E+00	5.3E-01	3.1E-01	3.2E-01	4.2E-01	3.3E-01	5.7E-01	1.1E+00	7.4E-01
Hexane	1-hr 9th	4.5E+00	1.1E+01	7.1E+00	6.8E+00	8.9E+00	6.9E+00	4.5E+00	1.0E+01	9.2E+00
H ₂ S	1-hr 9th	4.6E-01	1.3E-01	3.3E-01	1.7E-01	1.5E-01	3.1E-01	2.3E-01	9.2E-02	7.5E+00
Methyl ethyl ketone group	1-hr 9th	2.7E-01	3.4E-01	2.2E-01	2.2E-01	2.6E-01	2.2E-01	1.9E-01	9.5E-01	5.4E-01
Napthalenes	1-hr 9th	6.5E-03	7.7E-03	6.5E-03	6.2E-03	5.7E-03	9.1E-03	4.0E-03	2.7E-03	1.5E-01
NO ₂	1-hr 9th	8.8E+01	6.6E+01	6.0E+01	3.4E+01	3.9E+01	3.8E+01	4.3E+01	2.4E+01	1.6E+02
NO ₂	24-hr MAX	3.5E+01	3.1E+01	2.1E+01	1.8E+01	2.1E+01	1.9E+01	1.8E+01	1.6E+01	4.5E+01
PM _{2.5}	24-hr 98th	1.1E+01	1.1E+01	5.1E+00	5.1E+00	5.7E+00	5.1E+00	4.8E+00	3.1E+00	1.1E+01
SO ₂	1-hr 9th	2.0E+01	3.2E+01	2.0E+01	2.7E+01	2.5E+01	3.5E+01	2.2E+01	1.6E+01	4.2E+02
SO ₂	1-hr 9th	2.0E+01	3.2E+01	2.0E+01	2.7E+01	2.5E+01	3.5E+01	2.2E+01	1.6E+01	4.2E+02
SO ₂	24-hr MAX	1.2E+01	1.7E+01	1.4E+01	1.4E+01	1.6E+01	1.4E+01	1.2E+01	6.2E+00	1.2E+02
Toluene	1-hr 9th	1.5E+00	3.5E+00	2.3E+00	2.0E+00	2.9E+00	2.1E+00	1.5E+00	2.3E+00	2.5E+00
Trimethylbenzene	1-hr 9th	2.1E-01	4.8E-01	3.3E-01	2.9E-01	4.1E-01	3.0E-01	2.1E-01	3.3E-01	3.4E-01
Xylenes	1-hr 9th	1.8E+00	4.0E+00	2.8E+00	2.3E+00	3.1E+00	2.5E+00	1.8E+00	2.7E+00	2.8E+00
arsenic	1-hr 9th	5.6E-05	9.1E-05	1.3E-04	7.1E-05	7.6E-05	7.8E-05	5.6E-05	5.5E-05	1.1E-03
beryllium	1-hr 9th	3.9E-06	6.1E-06	7.9E-06	4.5E-06	5.1E-06	4.9E-06	4.1E-06	3.3E-06	6.5E-05
chromium_6	24-hr MAX	5.8E-05	8.1E-05	6.5E-05	6.5E-05	7.4E-05	6.6E-05	5.9E-05	3.3E-05	2.4E-04
copper	1-hr 9th	2.7E-04	4.3E-04	5.4E-04	3.1E-04	3.5E-04	3.3E-04	2.7E-04	2.0E-04	4.6E-03
lead	24-hr MAX	1.4E-04	2.1E-04	1.8E-04	1.7E-04	1.9E-04	1.7E-04	1.4E-04	9.8E-05	8.4E-04
mercury	1-hr 9th	5.7E-05	7.6E-05	1.6E-04	7.1E-05	7.6E-05	8.1E-05	6.3E-05	3.8E-05	1.4E-03
nickel	1-hr 9th	2.4E-03	4.2E-03	2.7E-03	2.3E-03	3.0E-03	2.5E-03	2.1E-03	2.3E-03	1.2E-02
vanadium	24-hr MAX	1.4E-03	2.0E-03	2.1E-03	2.1E-03	1.9E-03	2.1E-03	1.5E-03	6.3E-04	4.1E-03

VOC = Volatile Organic Compounds.

Table 12 Summary of Existing and Approved Case Chronic Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Existing and Approved Conditions								
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs										
NO ₂	annual	3.7E+00	3.8E+00	2.3E+00	2.6E+00	2.2E+00	2.7E+00	2.3E+00	1.4E+00	3.8E+00
SO ₂	annual	1.2E+00	1.5E+00	1.7E+00	2.5E+00	1.4E+00	2.5E+00	1.1E+00	9.7E-01	6.5E+00
Carcinogenic PAH group 1	annual	2.8E-06	2.9E-06	3.9E-06	5.4E-06	3.5E-06	7.7E-06	2.7E-06	2.4E-06	3.1E-04
Carcinogenic PAH group 2	annual	1.6E-06	2.0E-06	2.1E-06	2.6E-06	2.0E-06	3.4E-06	1.6E-06	1.7E-06	1.1E-04
Carcinogenic PAH group 3	annual	1.2E-06	9.3E-07	9.2E-07	1.2E-06	9.7E-07	1.6E-06	9.6E-07	6.0E-07	4.7E-05
Napthalenes	annual	1.9E-04	1.9E-04	1.8E-04	2.4E-04	1.9E-04	3.1E-04	1.7E-04	1.4E-04	9.8E-03
Carbon disulphide group	annual	1.4E-03	1.8E-03	1.3E-03	1.5E-03	1.5E-03	1.7E-03	1.3E-03	1.5E-03	2.5E-02
H ₂ S	annual	1.6E-02	6.1E-03	5.7E-03	9.2E-03	7.1E-03	1.1E-02	1.0E-02	3.8E-03	2.6E-01
Aliphatic C17-C34 group	annual	2.7E-02	2.3E-02	1.3E-02	1.3E-02	1.6E-02	1.4E-02	1.2E-02	1.8E-01	6.1E-02
Aliphatic C2-C8 group	annual	1.0E+00	1.2E+00	8.0E-01	8.3E-01	9.4E-01	8.6E-01	7.3E-01	3.9E+00	1.8E+00
Aliphatic C9-C16 group	annual	3.0E-01	3.6E-01	2.3E-01	2.3E-01	2.8E-01	2.3E-01	2.1E-01	1.3E+00	5.9E-01
Aromatic C9-C16 group (with PAHs)	annual	3.9E-02	5.5E-02	3.7E-02	3.7E-02	4.4E-02	3.7E-02	3.4E-02	1.1E-01	5.1E-02
Aromatic C17-C34 group (with PAHs)	annual	2.9E-06	3.2E-06	2.8E-06	3.2E-06	3.0E-06	3.7E-06	2.6E-06	2.5E-06	7.9E-05
Benzene	annual	3.3E-02	1.2E-02	5.5E-03	5.8E-03	6.8E-03	5.9E-03	6.4E-03	2.7E-01	6.9E-03
Ethylbenzene	annual	2.6E-02	4.1E-02	2.8E-02	2.8E-02	3.4E-02	2.8E-02	2.6E-02	4.5E-02	3.1E-02
Ethylene	annual	1.1E-01	2.3E-02	4.0E-03	4.1E-03	4.8E-03	4.2E-03	5.3E-03	1.0E+00	6.7E-03
Formaldehyde	annual	6.0E-02	3.0E-02	1.9E-02	2.2E-02	2.4E-02	2.2E-02	2.9E-02	2.2E-01	4.3E-02
Hexane	annual	1.2E-01	2.1E-01	1.4E-01	1.5E-01	1.7E-01	1.5E-01	1.2E-01	2.0E-01	2.7E-01
Methyl ethyl ketone group	annual	2.3E-02	1.3E-02	6.8E-03	6.9E-03	8.4E-03	7.2E-03	6.6E-03	1.9E-01	2.5E-02
PM2.5	annual	6.4E+00	6.6E+00	6.4E-01	6.6E-01	6.5E-01	6.8E-01	5.4E-01	4.6E-01	1.3E+00
Toluene	annual	6.7E-02	7.7E-02	4.9E-02	4.9E-02	6.0E-02	5.0E-02	4.5E-02	2.8E-01	6.7E-02
Trimethylbenzene	annual	6.9E-03	9.8E-03	6.5E-03	6.5E-03	7.9E-03	6.6E-03	6.0E-03	1.8E-02	7.2E-03
Xylenes	annual	6.3E-02	9.2E-02	6.2E-02	6.1E-02	7.4E-02	6.2E-02	5.6E-02	1.6E-01	6.8E-02
arsenic	annual	2.8E-06	3.8E-06	4.1E-06	4.7E-06	3.6E-06	5.1E-06	2.9E-06	3.2E-06	2.1E-05
barium	annual	4.5E-05	5.9E-05	7.0E-05	8.5E-05	5.8E-05	9.2E-05	4.7E-05	4.3E-05	4.5E-04
beryllium	annual	1.8E-07	2.4E-07	2.5E-07	2.9E-07	2.3E-07	3.1E-07	1.8E-07	1.9E-07	1.3E-06
cadmium	annual	1.9E-05	2.7E-05	2.6E-05	2.9E-05	2.4E-05	3.1E-05	1.9E-05	2.0E-05	1.2E-04
chromium	annual	3.9E-05	5.5E-05	4.8E-05	5.3E-05	5.1E-05	5.6E-05	3.9E-05	4.5E-05	1.7E-04
chromium_6	annual	3.9E-06	5.5E-06	4.8E-06	5.3E-06	5.1E-06	5.6E-06	3.9E-06	4.5E-06	1.7E-05
cobalt	annual	5.4E-06	8.2E-06	6.6E-06	6.7E-06	7.2E-06	6.9E-06	5.5E-06	8.8E-06	1.4E-05
copper	annual	1.2E-05	1.7E-05	1.7E-05	2.0E-05	1.6E-05	2.2E-05	1.2E-05	1.3E-05	9.1E-05
lead	annual	9.5E-06	1.3E-05	1.3E-05	1.4E-05	1.2E-05	1.5E-05	9.6E-06	1.1E-05	5.6E-05
manganese	annual	1.5E-05	2.2E-05	1.8E-05	1.9E-05	1.9E-05	2.0E-05	1.5E-05	1.9E-05	5.2E-05
mercury	annual	2.5E-06	3.2E-06	3.9E-06	4.8E-06	3.2E-06	5.2E-06	2.5E-06	2.2E-06	2.7E-05
molybdenum	annual	1.5E-05	2.0E-05	2.1E-05	2.5E-05	1.9E-05	2.7E-05	1.5E-05	1.5E-05	1.2E-04
nickel	annual	1.1E-04	1.5E-04	1.4E-04	1.4E-04	1.4E-04	1.4E-04	1.1E-04	1.4E-04	3.2E-04
selenium	annual	1.1E-05	1.6E-05	1.2E-05	1.2E-05	1.4E-05	1.2E-05	1.1E-05	1.5E-05	1.4E-05
vanadium	annual	1.1E-04	1.3E-04	1.7E-04	1.6E-04	1.3E-04	1.6E-04	1.2E-04	9.7E-05	3.5E-04
zinc	annual	4.1E-04	5.5E-04	5.8E-04	6.7E-04	5.2E-04	7.2E-04	4.1E-04	4.1E-04	3.1E-03

VOC = Volatile Organic Compounds.

Table 13 Summary of Project Case Chronic Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Project Case								
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs										
NO ₂	annual	3.9E+00	4.0E+00	3.8E+00	3.0E+00	2.9E+00	3.2E+00	2.5E+00	1.4E+00	5.1E+00
SO ₂	annual	1.2E+00	1.5E+00	1.8E+00	2.7E+00	1.5E+00	2.8E+00	1.2E+00	9.8E-01	1.6E+01
Carcinogenic PAH group 1	annual	3.7E-06	3.5E-06	9.1E-06	7.1E-06	5.7E-06	9.5E-06	3.6E-06	2.5E-06	3.1E-04
Carcinogenic PAH group 2	annual	2.0E-06	2.2E-06	3.9E-06	3.2E-06	2.8E-06	4.1E-06	1.9E-06	1.7E-06	1.1E-04
Carcinogenic PAH group 3	annual	1.3E-06	1.0E-06	1.7E-06	1.5E-06	1.3E-06	1.8E-06	1.1E-06	6.2E-07	4.7E-05
Napthalenes	annual	2.2E-04	2.0E-04	3.5E-04	2.9E-04	2.6E-04	3.7E-04	1.9E-04	1.4E-04	9.9E-03
Carbon disulphide group	annual	1.4E-03	1.8E-03	1.8E-03	1.6E-03	1.8E-03	1.9E-03	1.4E-03	1.5E-03	4.6E-02
H ₂ S	annual	1.6E-02	6.5E-03	1.1E-02	1.1E-02	9.3E-03	1.3E-02	1.1E-02	3.9E-03	4.8E-01
Aliphatic C17-C34 group	annual	2.7E-02	2.3E-02	1.4E-02	1.3E-02	1.6E-02	1.4E-02	1.2E-02	1.8E-01	1.0E-01
Aliphatic C2-C8 group	annual	1.1E+00	1.2E+00	9.8E-01	8.9E-01	1.0E+00	9.2E-01	7.6E-01	3.9E+00	2.6E+00
Aliphatic C9-C16 group	annual	3.0E-01	3.6E-01	2.3E-01	2.3E-01	2.8E-01	2.4E-01	2.1E-01	1.3E+00	9.0E-01
Aromatic C9-C16 group (with PAHs)	annual	3.9E-02	5.5E-02	3.7E-02	3.7E-02	4.4E-02	3.8E-02	3.4E-02	1.1E-01	5.1E-02
Aromatic C17-C34 group (with PAHs)	annual	3.1E-06	3.3E-06	4.1E-06	3.6E-06	3.5E-06	4.2E-06	2.8E-06	2.5E-06	7.9E-05
Benzene	annual	3.3E-02	1.2E-02	5.6E-03	5.8E-03	6.8E-03	5.9E-03	6.4E-03	2.7E-01	7.8E-03
Ethylbenzene	annual	2.6E-02	4.1E-02	2.8E-02	2.8E-02	3.4E-02	2.8E-02	2.6E-02	4.5E-02	3.1E-02
Ethylene	annual	1.1E-01	2.3E-02	4.1E-03	4.2E-03	4.9E-03	4.2E-03	5.3E-03	1.0E+00	9.0E-03
Formaldehyde	annual	6.0E-02	3.0E-02	2.0E-02	2.2E-02	2.4E-02	2.3E-02	2.9E-02	2.2E-01	4.3E-02
Hexane	annual	1.3E-01	2.1E-01	1.7E-01	1.5E-01	1.8E-01	1.6E-01	1.3E-01	2.0E-01	3.6E-01
Methyl ethyl ketone group	annual	2.4E-02	1.3E-02	7.2E-03	7.0E-03	8.6E-03	7.3E-03	6.6E-03	1.9E-01	4.1E-02
PM _{2.5}	annual	6.5E+00	6.6E+00	8.3E-01	7.3E-01	7.4E-01	7.5E-01	5.8E-01	4.7E-01	1.5E+00
Toluene	annual	6.7E-02	7.7E-02	5.0E-02	4.9E-02	6.0E-02	5.0E-02	4.5E-02	2.8E-01	7.8E-02
Trimethylbenzene	annual	6.9E-03	9.8E-03	6.5E-03	6.5E-03	7.9E-03	6.6E-03	6.0E-03	1.8E-02	7.2E-03
Xylenes	annual	6.3E-02	9.2E-02	6.2E-02	6.1E-02	7.4E-02	6.2E-02	5.6E-02	1.6E-01	6.9E-02
arsenic	annual	3.3E-06	4.2E-06	8.0E-06	5.8E-06	5.2E-06	6.3E-06	3.4E-06	3.3E-06	3.5E-05
barium	annual	5.7E-05	6.8E-05	1.6E-04	1.1E-04	9.4E-05	1.2E-04	5.9E-05	4.5E-05	7.5E-04
beryllium	annual	2.1E-07	2.7E-07	4.9E-07	3.6E-07	3.3E-07	3.9E-07	2.2E-07	2.0E-07	2.1E-06
cadmium	annual	2.2E-05	2.9E-05	4.8E-05	3.6E-05	3.3E-05	3.9E-05	2.3E-05	2.1E-05	2.0E-04
chromium	annual	4.3E-05	5.8E-05	7.6E-05	6.1E-05	6.2E-05	6.5E-05	4.3E-05	4.6E-05	2.7E-04
chromium_6	annual	4.3E-06	5.8E-06	7.6E-06	6.1E-06	6.2E-06	6.5E-06	4.3E-06	4.6E-06	2.7E-05
cobalt	annual	5.7E-06	8.4E-06	8.2E-06	7.2E-06	7.9E-06	7.5E-06	5.8E-06	8.8E-06	2.0E-05
copper	annual	1.4E-05	1.8E-05	3.4E-05	2.5E-05	2.3E-05	2.7E-05	1.5E-05	1.3E-05	1.5E-04
lead	annual	1.1E-05	1.4E-05	2.3E-05	1.7E-05	1.6E-05	1.8E-05	1.1E-05	1.1E-05	9.0E-05
manganese	annual	1.6E-05	2.2E-05	2.5E-05	2.1E-05	2.3E-05	2.2E-05	1.6E-05	1.9E-05	7.8E-05
mercury	annual	3.2E-06	3.7E-06	9.0E-06	6.3E-06	5.3E-06	6.9E-06	3.3E-06	2.4E-06	4.4E-05
molybdenum	annual	1.8E-05	2.2E-05	4.3E-05	3.1E-05	2.8E-05	3.4E-05	1.8E-05	1.6E-05	1.9E-04
nickel	annual	1.1E-04	1.5E-04	1.8E-04	1.5E-04	1.5E-04	1.6E-04	1.1E-04	1.4E-04	4.6E-04
selenium	annual	1.1E-05	1.6E-05	1.2E-05	1.2E-05	1.4E-05	1.2E-05	1.1E-05	1.5E-05	1.7E-05
vanadium	annual	1.2E-04	1.3E-04	2.2E-04	1.7E-04	1.5E-04	1.8E-04	1.2E-04	9.8E-05	5.0E-04
zinc	annual	4.8E-04	6.0E-04	1.1E-03	8.4E-04	7.6E-04	9.1E-04	5.0E-04	4.3E-04	5.1E-03

VOC = Volatile Organic Compounds.

Table 14 Summary of Planned Development Case Chronic Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Planned Development Case								
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence
Criteria Pollutants/ VOCs										
NO ₂	annual	4.8E+00	5.1E+00	4.5E+00	3.9E+00	4.0E+00	4.0E+00	3.3E+00	2.0E+00	6.1E+00
SO ₂	annual	1.4E+00	1.8E+00	1.8E+00	2.2E+00	1.7E+00	2.3E+00	1.4E+00	1.2E+00	1.6E+01
Carcinogenic PAH group 1	annual	6.7E-06	8.6E-06	1.2E-05	1.0E-05	9.9E-06	1.3E-05	6.6E-06	5.4E-06	3.2E-04
Carcinogenic PAH group 2	annual	3.2E-06	4.3E-06	5.3E-06	4.6E-06	4.6E-06	5.5E-06	3.2E-06	3.1E-06	1.1E-04
Carcinogenic PAH group 3	annual	1.8E-06	1.8E-06	2.2E-06	2.0E-06	2.0E-06	2.4E-06	1.6E-06	1.1E-06	4.8E-05
Napthalenes	annual	3.2E-04	3.9E-04	4.7E-04	4.1E-04	4.1E-04	4.9E-04	3.0E-04	2.6E-04	1.0E-02
Carbon disulphide group	annual	1.8E-03	2.4E-03	2.1E-03	2.0E-03	2.2E-03	2.3E-03	1.7E-03	1.9E-03	4.6E-02
H ₂ S	annual	1.8E-02	8.7E-03	1.3E-02	1.2E-02	1.2E-02	1.5E-02	1.3E-02	4.5E-03	4.8E-01
Aliphatic C17-C34 group	annual	4.0E-02	3.7E-02	2.2E-02	2.4E-02	3.1E-02	2.4E-02	2.4E-02	1.8E-01	1.2E-01
Aliphatic C2-C8 group	annual	1.4E+00	1.7E+00	1.3E+00	1.3E+00	1.5E+00	1.3E+00	1.1E+00	4.4E+00	3.1E+00
Aliphatic C9-C16 group	annual	4.6E-01	5.7E-01	3.7E-01	3.8E-01	4.8E-01	3.9E-01	3.6E-01	1.4E+00	1.1E+00
Aromatic C9-C16 group (with PAHs)	annual	5.1E-02	7.3E-02	5.0E-02	5.0E-02	6.0E-02	5.1E-02	4.6E-02	1.3E-01	6.5E-02
Aromatic C17-C34 group (with PAHs)	annual	4.3E-06	5.3E-06	5.4E-06	4.9E-06	5.2E-06	5.6E-06	4.0E-06	4.0E-06	8.1E-05
Benzene	annual	3.6E-02	1.6E-02	7.9E-03	8.6E-03	1.1E-02	8.6E-03	9.3E-03	2.7E-01	1.2E-02
Ethylbenzene	annual	3.2E-02	5.0E-02	3.5E-02	3.5E-02	4.2E-02	3.5E-02	3.2E-02	5.5E-02	3.8E-02
Ethylene	annual	1.1E-01	2.5E-02	5.5E-03	5.7E-03	6.8E-03	5.7E-03	6.8E-03	1.0E+00	1.1E-02
Formaldehyde	annual	6.4E-02	3.5E-02	2.4E-02	2.6E-02	2.9E-02	2.7E-02	3.3E-02	2.2E-01	4.7E-02
Hexane	annual	1.9E-01	3.0E-01	2.3E-01	2.2E-01	2.6E-01	2.2E-01	1.9E-01	2.9E-01	4.3E-01
Methyl ethyl ketone group	annual	2.9E-02	2.0E-02	1.1E-02	1.2E-02	1.5E-02	1.2E-02	1.2E-02	1.9E-01	4.7E-02
PM _{2.5}	annual	6.7E+00	6.9E+00	1.0E+00	9.3E-01	9.8E-01	9.6E-01	7.8E-01	6.1E-01	1.7E+00
Toluene	annual	9.3E-02	1.2E-01	7.7E-02	7.7E-02	9.3E-02	7.8E-02	7.1E-02	3.3E-01	1.1E-01
Trimethylbenzene	annual	1.0E-02	1.5E-02	1.0E-02	1.0E-02	1.2E-02	1.0E-02	9.2E-03	2.4E-02	1.1E-02
Xylenes	annual	8.2E-02	1.2E-01	8.3E-02	8.2E-02	9.9E-02	8.4E-02	7.6E-02	1.9E-01	9.2E-02
arsenic	annual	5.0E-06	6.3E-06	9.4E-06	7.5E-06	7.3E-06	8.0E-06	5.2E-06	4.1E-06	3.7E-05
barium	annual	9.4E-05	1.1E-04	1.9E-04	1.5E-04	1.4E-04	1.6E-04	9.7E-05	6.3E-05	8.0E-04
beryllium	annual	3.1E-07	3.9E-07	5.8E-07	4.6E-07	4.6E-07	4.9E-07	3.2E-07	2.5E-07	2.2E-06
cadmium	annual	3.6E-05	4.8E-05	6.1E-05	5.0E-05	5.1E-05	5.2E-05	3.6E-05	3.2E-05	2.1E-04
chromium	annual	5.5E-05	7.4E-05	8.7E-05	7.4E-05	7.8E-05	7.7E-05	5.6E-05	5.3E-05	2.8E-04
chromium_6	annual	5.5E-06	7.4E-06	8.7E-06	7.4E-06	7.8E-06	7.7E-06	5.6E-06	5.3E-06	2.8E-05
cobalt	annual	7.1E-06	1.1E-05	9.6E-06	8.7E-06	9.7E-06	9.0E-06	7.2E-06	1.0E-05	2.2E-05
copper	annual	2.2E-05	2.8E-05	4.1E-05	3.3E-05	3.2E-05	3.5E-05	2.3E-05	1.8E-05	1.6E-04
lead	annual	1.6E-05	2.1E-05	2.7E-05	2.2E-05	2.3E-05	2.3E-05	1.6E-05	1.4E-05	9.7E-05
manganese	annual	2.0E-05	2.8E-05	2.9E-05	2.5E-05	2.8E-05	2.6E-05	2.0E-05	2.2E-05	8.3E-05
mercury	annual	5.4E-06	6.4E-06	1.1E-05	8.5E-06	8.0E-06	9.0E-06	5.6E-06	3.4E-06	4.7E-05
molybdenum	annual	2.7E-05	3.4E-05	5.1E-05	4.1E-05	4.0E-05	4.3E-05	2.8E-05	2.0E-05	2.0E-04
nickel	annual	1.4E-04	2.1E-04	2.1E-04	1.8E-04	2.0E-04	1.9E-04	1.5E-04	1.7E-04	5.0E-04
selenium	annual	1.1E-05	1.6E-05	1.2E-05	1.2E-05	1.5E-05	1.2E-05	1.1E-05	1.5E-05	1.7E-05
vanadium	annual	1.7E-04	2.3E-04	2.7E-04	2.2E-04	2.3E-04	2.3E-04	1.7E-04	1.4E-04	5.6E-04
zinc	annual	7.3E-04	9.2E-04	1.4E-03	1.1E-03	1.1E-03	1.2E-03	7.5E-04	5.5E-04	5.4E-03

VOC = Volatile Organic Compounds.

Table 15 Summary of Project Only Chronic Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Project Only (Incremental Change)									
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence	
Criteria Pollutants/ VOCs											
NO ₂	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SO ₂	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carcinogenic PAH group 1	annual	8.9E-07	5.2E-07	5.3E-06	1.7E-06	2.2E-06	1.8E-06	8.9E-07	1.2E-07	2.1E-06	
Carcinogenic PAH group 2	annual	3.2E-07	1.8E-07	1.9E-06	6.0E-07	8.0E-07	6.4E-07	3.2E-07	4.1E-08	7.4E-07	
Carcinogenic PAH group 3	annual	1.3E-07	7.7E-08	7.8E-07	2.5E-07	3.3E-07	2.7E-07	1.3E-07	1.7E-08	3.1E-07	
Napthalenes	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Carbon disulphide group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
H ₂ S	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aliphatic C17-C34 group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aliphatic C2-C8 group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aliphatic C9-C16 group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aromatic C9-C16 group (with PAHs)	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aromatic C17-C34 group (with PAHs)	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Benzene	annual	7.8E-06	5.4E-06	5.4E-05	1.6E-05	2.3E-05	1.8E-05	8.7E-06	1.5E-06	9.0E-04	
Ethylbenzene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Ethylene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Formaldehyde	annual	1.5E-04	1.2E-04	1.0E-03	3.2E-04	4.5E-04	3.5E-04	1.7E-04	3.2E-05	4.4E-04	
Hexane	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Methyl ethyl ketone group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
PM _{2.5}	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Toluene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Trimethylbenzene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Xylenes	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
arsenic	annual	5.3E-07	3.9E-07	3.9E-06	1.1E-06	1.6E-06	1.3E-06	5.9E-07	1.0E-07	1.4E-05	
barium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
beryllium	annual	3.2E-08	2.4E-08	2.4E-07	6.9E-08	9.8E-08	7.7E-08	3.5E-08	6.1E-09	8.1E-07	
cadmium	annual	2.9E-06	2.2E-06	2.2E-05	6.3E-06	9.0E-06	7.0E-06	3.2E-06	5.6E-07	7.5E-05	
chromium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
chromium_6	annual	3.7E-07	2.8E-07	2.7E-06	8.0E-07	1.1E-06	8.9E-07	4.1E-07	7.1E-08	9.6E-06	
cobalt	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
copper	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
lead	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
manganese	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
mercury	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
molybdenum	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
nickel	annual	5.5E-06	4.1E-06	4.1E-05	1.2E-05	1.7E-05	1.3E-05	6.2E-06	1.1E-06	1.4E-04	
selenium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
vanadium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
zinc	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

n/a = Not applicable; VOC = Volatile Organic Compounds.

Table 16 Summary of Future Emission Sources Chronic Air Concentrations [$\mu\text{g}/\text{m}^3$]

Chemical	Averaging Period	Future Emission Sources (Incremental Change)									
		Conklin	Janvier	Winefred	Trapper A	Trapper B	MEG House	Christina Lake Lodge	La Loche	Fence	
Criteria Pollutants/ VOCs											
NO ₂	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SO ₂	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Carcinogenic PAH group 1	annual	3.9E-06	5.7E-06	8.6E-06	5.0E-06	6.4E-06	5.2E-06	3.9E-06	3.0E-06	5.7E-06	
Carcinogenic PAH group 2	annual	1.6E-06	2.3E-06	3.3E-06	2.0E-06	2.5E-06	2.1E-06	1.6E-06	1.4E-06	2.3E-06	
Carcinogenic PAH group 3	annual	6.1E-07	9.0E-07	1.3E-06	7.8E-07	1.0E-06	8.2E-07	6.1E-07	5.1E-07	8.9E-07	
Napthalenes	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Carbon disulphide group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
H ₂ S	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aliphatic C17-C34 group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aliphatic C2-C8 group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aliphatic C9-C16 group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aromatic C9-C16 group (with PAHs)	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Aromatic C17-C34 group (with PAHs)	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Benzene	annual	3.1E-03	3.7E-03	2.4E-03	2.8E-03	3.8E-03	2.8E-03	2.9E-03	1.9E-03	4.7E-03	
Ethylbenzene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Ethylene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Formaldehyde	annual	3.8E-03	5.6E-03	4.8E-03	4.3E-03	5.2E-03	4.4E-03	3.9E-03	4.8E-03	4.6E-03	
Hexane	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Methyl ethyl ketone group	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
PM _{2.5}	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Toluene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Trimethylbenzene	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Xylenes	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
arsenic	annual	2.2E-06	2.5E-06	5.3E-06	2.8E-06	3.7E-06	2.9E-06	2.3E-06	9.1E-07	1.6E-05	
barium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
beryllium	annual	1.3E-07	1.5E-07	3.2E-07	1.7E-07	2.2E-07	1.7E-07	1.4E-07	5.5E-08	9.4E-07	
cadmium	annual	1.7E-05	2.1E-05	3.4E-05	2.0E-05	2.7E-05	2.1E-05	1.7E-05	1.1E-05	9.2E-05	
chromium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
chromium_6	annual	1.6E-06	1.9E-06	3.8E-06	2.1E-06	2.7E-06	2.1E-06	1.7E-06	7.4E-07	1.1E-05	
cobalt	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
copper	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
lead	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
manganese	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
mercury	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
molybdenum	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
nickel	annual	3.7E-05	6.1E-05	7.2E-05	4.6E-05	6.4E-05	4.8E-05	3.8E-05	2.4E-05	1.8E-04	
selenium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
vanadium	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
zinc	annual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

n/a = Not applicable; VOC = Volatile Organic Compounds.