# Appendix B Greenhouse Gas Emissions

## 1. Facility Level Greenhouse Gas Emissions

To determine the potential change in greenhouse gas emissions related to the proposed project, a facility level estimate of direct greenhouse gas emissions associated with the existing HyLife Foods facility and the R3 Innovations IWWTF and the proposed alterations at these facilities was completed.

As outlined in the document "Greenhouse Gas Emissions Reporting: Technical Guidance on Reporting Greenhouse Gas Emissions", greenhouse gas emissions should be estimated using methods consistent with the guidelines adopted by the United Nations Framework Convention on Climate Change (UNFCC) (Pollutant Inventories and Reporting Division, Environment Canada, 2012). The UNFCC accepts the Intergovernmental Panel on Climate Change (IPCC) technical documents for estimating greenhouse gas emissions. For the purposes of this assessment, the IPCC technical document titled "2006 IPCC Guidelines for National Greenhouse Gas Inventories" was used to estimate the greenhouse gas emissions (Intergovernmental Panel on Climate Change, 2006). Further guidance on emission factors and methodology was obtained from Canada's National Inventory Report 1990-2009: Greenhouse Gas Sources and Sinks in Canada (Pollutant Inventories and Reporting Division, Environment Canada, 2011).

Reporting of greenhouse emissions is mandatory in Canada for facilities that emit 50 kilotonnes or more of carbon dioxide  $(CO_2)$  equivalent  $(CO_2e)$  annually.

Under the facility level reporting guidelines (Pollutant Inventories and Reporting Division, Environment Canada, 2012), when reporting greenhouse gas emissions, the reporter is required to disaggregate the emissions by the following source categories:

- Stationary Fuel Combustion
- Industrial Process
- Venting
- Flaring
- Fugitive
- On-site Transportation
- Waste
- Wastewater

Detailed calculation sheets are attached showing the estimated existing and proposed annual greenhouse gas emissions at the HyLife Foods facility and the IWWTF.

## 2. HyLife Foods Greenhouse Gas Emissions

The existing HyLife Foods facility and the proposed alterations at this facility will generate direct greenhouse gas emissions under the Industrial Process, Stationary Fuel Combustion and On-Site Transportation source categories.

The following are the greenhouse gas emission sources at the HyLife Foods facility and their related source categories.

- Enteric fermentation of the live hog population at the facility (Industrial Process)
- CO<sub>2</sub> used in the stunning system (Industrial Process)
- CO<sub>2</sub> used to produce dry ice (Industrial Process)
- Diesel fuel combusted in the on-site skid steer (On-Site Transportation)

• Natural gas combusted for building and process heat (Stationary Fuel Combustion)

The proposed alterations at the HyLife Foods facility are not anticipated to change the emission sources at the facility, however are anticipated to increase the amount of greenhouse gas emissions generated at the facility on an annual basis.

Although the HyLife Foods facility contains refrigeration and cooling units, as outlined in the facility level reporting guidelines, emissions of hydrofluorocarbons (HFCs) from refrigeration and air conditioning are not considered industrial process or industrial product use emissions and therefore should not be reported. As such, potential fugitive emissions from refrigeration and cooling units have not been included in this inventory. (Pollutant Inventories and Reporting Division, Environment Canada, 2012)

As wastewater from the hog holding facility is transferred to the IWWTF for treatment and the truck bedding material is stored and applied to land offsite, greenhouse gas emissions associated with the management of manure were not included in this inventory.

### 2.1 Industrial Process

Enteric fermentation of the live hog population at the HyLife Foods facility will generate methane (CH<sub>4</sub>) emissions which is considered a direct greenhouse gas emission. The maximum storage capacity of the holding facility is 4,000 hogs. At the existing processing rate of 27,550 hogs/week, approximately 5,510 hogs pass through the holding facility over a 24 hour period. At the proposed processing rate of 37,500 hogs/week approximately 7,500 hogs will pass through the holding facility over a 24 hour period. At the proposed processing rate of 37,000 hogs will pass through the holding facility over a 24 hour period. Although more hogs will pass through the holding facility over a 24 hour period, the live hog population will never exceed 4,000 hogs as no expansion to the existing holding facility is proposed. To estimate the existing and proposed greenhouse gas emissions associated with the enteric fermentation of the live hog population at the HyLife Foods facility, a total live hog population of 4,000 hogs was assumed to be present within the holding facility for both scenarios.

Carbon dioxide (a greenhouse gas) is used at the HyLife Foods facility in the stunning system and to produce dry ice for product shipments. The proposed increase in processing will increase the CO<sub>2</sub> used in both of these systems.

## 2.2 On-Site Transportation

A diesel fueled skid steer is used on-site to move materials. The combustion of diesel fuel generates  $CO_2$ ,  $CH_4$  and nitrous oxide (N<sub>2</sub>O) all of which are considered greenhouse gases. The proposed increase in processing is anticipated to increase the amount of diesel fuel used and therefore the associated greenhouse gas emissions.

## 2.3 Stationary Fuel Combustion

Carbon dioxide,  $CH_4$  and  $N_2O$  are generated during the combustion process. The use of natural gas for building and process heat produces carbon dioxide, methane and nitrous oxide emissions. The current rate of natural gas usage at the facility is not expected to change with the increase in hog processing,

#### 2.4 Change in Greenhouse Gas Emissions – HyLife Foods

The following Table presents the current and proposed emissions in carbon dioxide equivalent at the HyLife Foods facility. Detailed calculations sheets are attached.

<b>Current Condition</b>		
Total CO <sub>2</sub> e	25,385	kg CO <sub>2</sub> e/day
Total CO <sub>2</sub> e	9,266	tonne CO2e/year
Proposed Condition	on	
Total CO <sub>2</sub> e	26,283	kg CO <sub>2</sub> e/day
Total CO <sub>2</sub> e	9,593	tonne CO2e/year

#### Table 1: Current and Proposed Carbon Dioxide Emissions

## 3. IWWTF Greenhouse Gas Emissions

According to the IPCC, reported and counted emissions from wastewater treatment are to include CH<sub>4</sub> and N<sub>2</sub>O. Aerobic treatment of wastewater can emit substantial quantities of CO<sub>2</sub>; however, these emissions are of biogenic origin. In accordance with IPCC reporting guidelines, special consideration is necessary when reporting carbon dioxide emissions from biomass to ensure that there is no double counting. Carbon dioxide emissions from the aerobic treatment of wastewater are not to be included in inventories as it is assumed that the biomass is produced in a sustainable manner meaning that the carbon dioxide released by the degraded biomass is replaced by growing biomass which in turn reabsorbs the same amount of atmospheric carbon as was given during the aerobic wastewater treatment process. Methane and nitrous oxide emissions must be reported for wastewater treatment as there is no reverse biogenic mechanism by which replacement biomass removes these emissions from the atmosphere. As a result, the IPCC have not developed guidelines to quantify the amount of carbon dioxide generated during aerobic wastewater treatment. (Intergovernmental Panel on Climate Change, 2006)

According to the IPCC, wastewater and its sludge can produce methane if degraded anaerobically. During aerobic wastewater treatment, methane production is assumed to be negligible. Methane production is dependent on the quantity of degradable organic material in the wastewater.

Direct emissions of nitrous oxide are generated during both the nitrification and denitrification process in wastewater treatment. The IPCC has developed a method to estimate the nitrous oxide emissions at municipal treatment plants based on the human population discharging to the plant. No method has been developed to determine the nitrous oxide emissions from industrial wastewater treatment facilities (Intergovernmental Panel on Climate Change, 2006).

As the wastewater treatment and sludge management at the IWWTF does not include anaerobic processes, the greenhouse gas emissions to be considered in the facility's inventory are limited to the following sources:

- Diesel fuel combusted in a site truck for moving sludge bins (On-Site Transportation)
- Natural gas combusted for building heat (Stationary Fuel Combustion)

The proposed alterations at the IWWTF facility are not anticipated to change the emission sources at the facility.

## 3.1 On-Site Transportation

A diesel fueled truck is used on-site to move sludge bins around the IWWTF site. The combustion of diesel fuel generates  $CO_2$ ,  $CH_4$  and  $N_2O$  all of which are considered greenhouse gases. The proposed increase in sludge generation is anticipated to increase the amount of diesel fuel used and therefore the associated greenhouse gas emissions.

## 3.2 Stationary Fuel Combustion

Carbon dioxide,  $CH_4$  and  $N_2O$  are generated during the combustion process. The use of natural gas for building heat and produces carbon dioxide, methane and nitrous oxide emissions. No increase in natural gas usage is anticipated at the IWWTF as a result of the proposed alterations, therefore no changes to the amount of emissions generated are anticipated.

## 3.3 Change in Greenhouse Gas Emissions - IWWTF

The following Table presents the current and proposed emissions in carbon dioxide equivalent at the IWWTF. Detailed calculations sheets are attached.

Current Condition				
Total CO <sub>2</sub> e	179	kg CO <sub>2</sub> e/day		
Total CO <sub>2</sub> e	65	tonne CO2e/year		
Proposed Condition				
Total CO <sub>2</sub> e	182	kg CO₂e/day		
Total CO <sub>2</sub> e	66	tonne CO2e/year		

#### Table 2: Current and Proposed Carbon Dioxide Emissions

## 4. References

Pollutant Inventories and Reporting Division, Environment Canada. (2012). *Greenhouse Gas Emissions Reporting: Technical Guidance on Reporting Greenhouse Gas Emissions*. Gatineau QC: Government of Canada.

Intergovernmental Panel on Climate Change. (2006). *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Hayama, Japan: Institute for Global Environmental Strategies.

Pollutant Inventories and Reporting Division, Environment Canada. (2011). *National Inventory Report 1990-2009: Greenhouse Gas Sources and Sinks in Canada*. Available at http://www.ec.gc.ca/ges-ghg/

Stateway Profe Conduction         Name           Finances of the T-Ref Consequence Transmission         4.041.031 Springer           Finances of the T-Ref Consequence Transmission         4.041.031 Springer           COL, Enclosed Patter         4.041 Spr	Calculations based on 2006 IPCC Guidelines for National Greenhous	se Gas Inventorie	es	
Marca Go Loga: July av processor         4.400.000         Product Driver Rods           Bischoo Bris Tell Construintion         0.00         France Processor Repairs Decaded and the Processor Procesor Processor Processor Processor Processor Procesor	Current Condition - HyLife Foods Stationary Fuel Combustion			Notes
Op, Emission Farer         I         Op/L           GH, Emission Farer         6.07         0.071-7         COUNT         Control Factor Emission Facto	Natural Gas Usage - building and process heat	4,500,000	m <sup>3</sup> /year	
Column (Column)         Column (Column)         Column (Column)         Exercise framework (Column)         Exercise framework (Column)         Exercise framework (Column)         Column	Emissions Grid = Fuer Consumption & Emission Factor			
Out, demands in reads         Out 2010           No. Distance in reads         No. Distance in reads         Construction           Out, manual or OD, m			-	
Image: Process	CH <sub>4</sub> Emission Factor	0.037	g CH₄/m°	Emission Factors for Natural Gas, Industrial
00, minimum         2014 minimum         2014 minimum           01 C H emission         000 [bg CP, Very         000 [bg CP, Very           04 M provided Process         0.00 [bg CP, Very         0.00 [bg CP, Very           04 M provided Process         0.01 [bg V p, Only         Maximum capacity of the toding being in 4 000 rags - stain it aminimum           05 M provided Process         0.01 [bg V p, Only         Maximum capacity of the toding being in 4 000 rags - stain it aminimum           05 M provided Process         0.01 [bg V p, Only         Devided Process         Devided Process           06 M provided Process         0.01 [bg V p, Only         Devided Process (BB V p, Devided D bas dog	N <sub>2</sub> O Emission Factor	0.033	g N <sub>2</sub> O/m <sup>3</sup>	· · · · · ·
Oil, emission (K, emission (K) provide (K) provid (K) provide (K) provide (K) provide (K) provide (K) p	=			
Off, minister         6.6 // gr // day           N.D. entraces         6.7 // gr // day           Monister         6.6 // gr // day           Monister         6.6 // gr // day           Monister         4.4 // day           Entextures         6.6 // gr // day           Column Antigeness and the first operation of the first	-			
Ng O emission         0.41 light (phay           Material Process         Loe hog population         4.000 hogs           Emissions GHG – Live hog population at Emission Factor				
Internal Process         Name           Like http population         4,000         rogs           Emissions OHG = Live hog population * Emission Factor         CP         CP           CH         Emissions OHG = Live hog population * Emission Factor         CP           CH         Emissions OHG = Live hog population * Emission Factor         CP           CH         Emissions OHG = Live hog population * Emission         CP           CH         Emissions OHG = Live hog population * Emission         CP           CD         Emissions OHG = Live hog population * Emission         CP           CD         Emissions OHG = Live hog population * Emission         CP           CD         Emissions OHG = Fast Consumption * Emission         Emissions OHG = Fast Consumption * Emission           CD         Emissions OHG = Fast Consumption * Emission         Factor           CD         Emissions Factor         Q           CD         Emissions Facto				
Luk hog population         According         hogs         Measure capacity of the Value (body of a columb on our book of a c		0.41	kg N <sub>2</sub> O/day	
CH, Emission Factor         Constant - National Interestion, Report 1990, 2012 Table A52, MBA           CH, Emission Factor         CAL, Emission Factor         CAL, Vanter March A, Markan M, Caller M	Live hog population	4,000	hogs	Maximum capacity of the holding facility is 4,000 hogs - barn is emptied and filled throughout the day but live hog population never exceeds this. As wastewater from holding facility is transferred to IWWTF for treatment, manure management emissions are anticipated to be negligible
OP: Le crission         Bit Correlation         Non-mission factors are available for CO, and NLO emission for memorial on CO, and NLO emission for CO, and NLO emission		1.5	kg CH₄/head/year	Canada - National Inventory Report 1990-2009 Table A8-22 Methane Emission Factors for Enteric Fermentation for Non-cattle Animals, Pigs
Off. 4 entrations         G44 Gr         Off. Addition           CO, Use (DP) via and Sturming)         ED0.60.00         GO, Optimization         Provided by HgLife Frads           OP. Site Transportation         OG entrations 100000         GO, Optimization         Provided by HgLife Frads           OP. Site Transportation         Direct Used In Std Steer         GO         Provided by HgLife Frads           OD. Entration Factor         2.003         GO, Used In Std Steer         Conduct National Internation Factor           OD. Entration Factor         0.010         GO, Use (DP) view (Add Combustion Status)         Provided by HgLife Frads           OD. Entration Factor         0.020         g CO, Use (DP) view (Add Combustion Status)         Provided DP HgLife Frads           OD. Entration Factor         0.020         g CO, Use (DP) view (Add Combustion Status)         Provided DP HgLife Frads           OD. Combustion Factor         0.022         g CO, Use (DP) view (Add Combustion Status)         Provided DP HgLife Frads         Provided DP HgLife Frads           OD. Combustion Factor         0.022         g CO, Use (DP) view (Add Combustion Status)         Provided DP HgLife Frads         Provided DP HgLife Frads           OD. Combustion         0.022         g CO, Use (DP) view (Add Combustion Status)         Provided DP HgLife Frads         Provided DP HgLife Frads           OD. entrations </th <td>CH. amissionel</td> <td>6000 00</td> <td></td> <td>No emission factors are available for <math>CO_2</math> and <math>N_2O</math> emissions from enterior</td>	CH. amissionel	6000 00		No emission factors are available for $CO_2$ and $N_2O$ emissions from enterior
CO., Use (Dy for and Source)         20034 (20) to 200, year         Provided by HyLife Foods           On-Site Transportation         Disked used in Slid Start         Provided by HyLife Foods           Emissions OHO = Fuel Consumption & Emission Factor         2,000         COL         Calibration Factor           CO, Emission Factor         0,100         COL         Calibration Factor         Calibration Factor           CO, Emission Factor         0,100         COL         Calibration Factor         Calibration Factor           CO, emission Factor         0,100         COL         Calibration Factor         Calibration Factor           CO, emission Factor         0,000         COL         Calibration Factor				fermentation
CD <sub>2</sub> emissions         Free Big CD_yday           Dn-Site Transportation         Densition of H0 = Foel Consumption a Emission Factor         165         Jacenia         Particled by HyLlle Foods           Emissions GH0 = Foel Consumption a Emission Factor         2,263         0 CO, 4         Particled by HyLlle Foods           CH, Emission Factor         0,140         GU/L         Candia - National Intension Report 100-2005 Table AB-11 Emission Factor           CH, Emission Factor         0,140         GU/L         Factors for Energy Mobile Consumption Report 100-2005 Table AB-11 Emission Factor           N/D Emission Factor         0,020         gV/L         Factors for Energy Mobile Consumption Report 100-2005 Table AB-11 Emission Report 100-2005 Table AB-12 Emis				Provided by HyLife Foods
Or-Sile Transportation         Total Last In Sul Start         Total CL         Total In Sul Start				
Deed         Deed         Provided DYRUE Foods           Emissions GHG = Fuel Consumption x Emission Factor CO, Emission Factor CO, Emission Factor CO, Emission Factor CO, Emission Factor CO, Emission Factor CO, Emission Factor N, 0 Emission Factor         2,460, g CO, L         Class - Astonial Inversey Report 1905-2000 Table AS-11 Emission Factor KETOR Monthline Construction Science, Heavy Adap Deer Vertices modurate control emission Exclusion Vertices modurate control emission Science, Heavy Adap Deer Vertices mo		1699.68	kg CU₂/day	
CO, Emission Pactor         2.03         0 CO/L         Caractal National Investory Report 1992 3007 Table AR-11 Ensis Vehicles molenne control investory Moles Combustion Sources, Heary-duly Dese Vehicles molenne control investory Report 1990 2000 Table Ab-1 CO, E Pattors In Vehicles Combustion Source	Diesel used in Skid Steer	165	L/week	Provided by HyLife Foods
OH, Emission Factor         0.410 g CH/L         Factor Set Energy Mobile control emission factor           NyO Emission Factor         0.082 g NyOL         Canada - National Investory Report 150: 2000 Table AB-11 Emission factor           CO_ emissions         64.00 g CH/Law         Canada - National Investory Report 150: 2000 Table AB-11 Emission factor           CO_ emissions         64.00 g CH/Law         Canada - National Investory Report 150: 2000 Table AB-11 Emission factor           CO_ emissions         64.00 g CH/Law         Canada - National Investory Report 150: 2000 Table AB-11 Emissions           CO_ emissions         64.00 g CH/Law         Canada - National Investory Report 150: 2000 Table AB-11 Emissions           Total EMISSIONS HYLIPE FOODS AS CO_ EXOVINEL         0.0019 g CH/Law         Canada - National Investory Report 150: 2000 Table AB-11 Emissions           Total EMISSIONS HYLIPE FOODS AS CO_ EXOVINEL         0.0019 g CH/Law         Canada - National Investory Report 150: 2000 Table AB-11 Emissions           Total EMISSIONS HYLIPE FOODS AS CO_ EXOVINEL         200 g CH/Law         Emission Ration           Total CH, Total EMISSIONS HYLIPE FOODS AS CO_ EXOVINEL         210 CH/Law         Emission Ration           Counted CH, Total EMISSIONS HYLIPE FOODS AS CO_ EXOVINEL         210 CH/Law         Emission Ration           Counted CH, Total EMISSIONS HYLIPE FOODS AS CO_ EXOVINEL         210 CH/Law         Emission Ration           Countemission Exov<		2,663	g CO₂/L	
NyOE Emission Factor         0.082 g NyOL         Factors for Energy Mobile Combustion Sources, Heavy-day Dises Webdes moderate control emission factor           CD, emissions         4.93395.00 g CO, Verol, CD, emissions         6.24 g R CO, Verol, CD, emissions         0.000 g R CO, Verol, CD, emissions         0.000 g R CO, Verol, CD, emissions         0.000 g R CO, Verol, CD, Verol, Verol, CD, emissions         0.000 g R CO, Verol, CD, Verol, Verol, CD, Verol, Verol, CD, Verol, Verol, CD, Verol, Verol, CD, Verol, Verol, CD, Verol, VERO, CD, Verol, VERO, VERO, Verol, VERO	CH <sub>4</sub> Emission Factor	0.140	g CH₄/L	Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
CO1_emissions       66.06       kg CO1_v/day         CH1_emissions       20.103       CM1_v/emissions         CM1_emissions       0.0033       kg CM1_v/day         NO_Demissions       0.0019       kg N_0 C/day         TOTAL EMISSIONS HYLIPE FOODS AS CO_EQUIVALENT       0.0019       kg N_0 C/day         Total CC1_       24003.38       kg CO_v/day         Total CC2_       24003.38       kg CO_v/day         Total CC4_       159.09       CO_v/day         Total CC4_       190.00       CO_v/day         Total CC4_       21       IPCC values         GWP CH4_       21       IPCC values         Current Condition - IWWTE       310       IPCC values         Current Condition - MWTE       28.485       kg CO2_widay         Emissions GHG = Fuel Consumption x Emission Factor       0.037       Q CH4/m³         CO2_emissions       1.877       g CO2/m³       Carada - Natural Cas, Manitaba, Maritaba RB 2 CH4, an	N <sub>2</sub> O Emission Factor	0.082	g N <sub>2</sub> O/L	Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel
CH, emissions         22:10 g CH, Week           OH, emissions         0.0031 g CH, edity           NO, Omissions         13:53 g N, O'Week           NO, Omissions         0.0019 kg N, O'Week           TOTAL EMISSIONS HYLIFE FOODS AS CO., EQUIVALENT         0.0019 kg N, O'Week           Total CO.,         24003 kg V, CO-View           Total CO.,         24003 kg V, CO-View           Total CO.,         24003 kg V, CO-View           COVER VIEWE         0.0488 kg N,O'day           Total NO,         0.4088 kg N,O'day           COVER VIEWE         21           COVER VIEWE         2538 kg CO-View           Stationary Fuel Construction         Notes           Total NO,         24003 kg N, O'day           Current Condition - MWITE         Stationary Fuel Construction           Stationary Fuel Construction         Notes           Current Condition - MUITE         3.477 m'/year           Stationary Fuel Construction         0.037 g CL/mar           Corrent Condition - Notural Gas Usage         3.477 m'/year           Corrent Condition - Notural Gas Usage         3.477 m'/year           Corrent Condition - Notural Gas Usage         3.477 m'/year           Corrent Condition - Notural Gas Usage         3.470 m'/year           Corrent Condition -			-	
CH, emissions         0.0033         kg CH, /day           N/O emissions         0.0019 kg N, Orday         0.0019 kg N, Orday           TOTAL EMISSIONS HYLIFE FOODS AS CO, EDUIVALENT         0.0019 kg N, Orday         0.0019 kg N, Orday           Total CD, Eduitations         0.0019 kg N, Orday         0.0019 kg N, Orday           Total CD, Eduitations         1001 CD, 24003.38 kg CO, visity         0.0019 kg N, Orday           Total NO, O         4.008 kg N, Orday         0.0019 kg N, Orday           GWP CH, 21         100 C, 24003.38 kg CO, visity         0.0018 kg N, Orday           GWP CH, 21         100 C, 24003.38 kg CO, visity         0.0018 kg N, Orday           GWP CH, 21         100 C, 24003.38 kg CO, visity         0.0018 kg N, Orday           GWP CH, 22         25.88 kg CO, visity         0.0018 kg N, Orday           GWP CH, 22         26.88 kg CO, visity         0.0018 kg N, Orday           GUIRENT F         0.0018 kg N, Orday         0.0018 kg N, Orday           Current Condition - IWWTF         0.0018 kg N, Orday         0.0028 kg CO, visits           Current Condition - Matural Gas Usage         30.467 m <sup>3</sup> /year         Provided by kyLule Foods           Co, emission Factor         1.167 m (year         Co, umais analyean kg N, Orday           CO, emission Factor         0.033 g N, Orday         GW, umais k				
N <sub>2</sub> O emissions         0.0019 kg N <sub>2</sub> O/day           TOTAL EMISSIONS HYLFE FOODS AS CO <sub>2</sub> EQUIVALENT         Total CO <sub>2</sub> 24003.38 kg CO/day           Total CO         24003.38 kg CO/day         Total CO           Total CO         24003.38 kg CO/day         POC values           Total CO         24003.38 kg NO/day         POC values           CWP PNL         21         PPC values           GWP PNL         21         PPC values           Total CO         25.88 kg CO_arday         BCC values           Current Condition - INWTF         Stationary Fuel Combustion         Notes           Stationary Fuel Combustion         Natural Cast Usage         33.471 m <sup>3</sup> /year         Provided by HyLife Foods           Emissions GHG = Fuel Consumption x Emission Factor         1.577 g CO/m <sup>3</sup> Carada - National Inventory Report 1900-2009 Table AB-1 CO <sub>2</sub> Eristion Factor           CO <sub>2</sub> Emission Factor         0.033 g N <sub>2</sub> Om <sup>3</sup> Carada - National Inventory Report 1900-2009 Table AB-2 CH <sub>4</sub> an Emission Factors for Natural Cas, Industrial           CO <sub>2</sub> emissions         62217560.00 g CO/year         Corada - National Inventory Report 1900-2009 Table AB-2 CH <sub>4</sub> an Emission Factors for Natural Cas, Industrial           CO <sub>2</sub> emissions         62217560.00 g CO/year         Corada - National Inventory Report 1900-2009 Table AB-2 CH <sub>4</sub> an Emission Factor           CO	CH₄ emissions	0.0033	kg CH₄/day	
TOTAL EMISSIONS HYLIFE FOODS AS CO.; EQUIVALENT       Total CO.       240003.38 kg CO.yday         Total CO.       240003.38 kg CO.yday       Total CO.         Total CO.       240003.38 kg CO.yday       Total CO.yday         Total CO.yday       Total CO.yday       Total CO.yday         GWP CH.       21       IPCC values         GWP N/O       310       IPCC values         Total CO.yday       25.385 kg CO.yday         Eurent Condition - IWWTF       26.000 kg C.yday         Stationary Fuel Consustion       Natural Gas Usage         CO.y Emission Factor       1.877         CO.y Emission Factor       0.037         CH, Emission Factor       0.033         CO.y Emission Factor       0.033         CH, Emission Factor       0.033         CO.y Emission       6217559.00         CO.y Emission       6217559.00         CO.y Emission       6217559.00         CO.y Emission       6217559.00         CO.y Emission Factor       0.033         CO.y Emission       6217559.00         CO.y Emission       6217559.00         CO.y Emission       6217559.00         CO.y Emission       62017699.00         CO.y Emission       62017699.00	—			
Total (Pt.         16.90 kg CH/day           Total N,O         0.4088 kg N,Olday           GWP CH.         21           GWP CH.         21           GWP CH.         21           FICC values           GWP CH.         21           GWP CH.         21           GWP CH.         21           FICC values           Total CO; e         25.85 kg CO; e/day           Current Condition - IWVTE         20.26 g/car           Stationary Fuel Combustion         Notes           Total CO; e         Provided by HyLife Foods           Corrent Condition - IWVTE         Co.ymax           Stationary Fuel Combustion         Notes           Remission Factor         1.377           G CO, Emission Factor         1.377           G CO, Emission Factor         0.033           G CH, Emission Factor         0.033           CO; emission factor         0.033           G CO; emissions         628175550.00 g CO-yhear           CO; emissions         0.0034 kg CH, /day           M+QO emissions         0.0034 kg Q, /day           Ch+, emissions         0.0034 kg Q, /day           CO; emissions         0.0034 kg Q, /day           Ch, emissions	-	0.0019		
Total CH,         119.00 kg CH/day           Total H,C         0.4088 kg N,Oddy           GWP CH,         21           GWP CH,         23           GWP CH,         26,865 kg CO; e/day           Based CO; e/day         tennes           Current Condition - IWVTE         9.2889 Co; e/day           Stationary Fuel Combustion         Notes           Remission SHG = Fuel Consumption x Emission Factor         1.877 g CO <sub>2</sub> m <sup>3</sup> Ch, Emission Factor         1.877 g CO <sub>2</sub> m <sup>4</sup> CH, Emission Factor         0.003 g Q -U/m <sup>3</sup> Chanda - National Inventory Report 1990-2009 Table A8-2 CH, an Emission Factor Sor Natural Cas, Industrial           NµO Emission Factor         0.033 g Q -U/m <sup>3</sup> Co_2 emission factor         0.033 g Q -U/m <sup>3</sup> Che emissions         0.0034 kg CH, /day           CO_2 emission         12032 Q G C/year           CO_2 emission         12032 Q G C/year           CO_2 emission         0.0034 kg CH, /day           MyO emission         0.0034 kg Q CJ/year           CO_2 emission	Total CO.	24903 38	kg CO₂/dav	
GWP CH, GWP N <sub>2</sub> O         21         IPCC values           GWP N <sub>2</sub> O         310         IPCC values           Total CO <sub>2</sub> e         25,385         ka CO <sub>2</sub> e/day           Stationary Fuel Combustion         9,266         totimas, CO <sub>2</sub> e/vae           Stationary Fuel Combustion         Notes           Emissions GHG = Fuel Consumption x Emission Factor         1,877         g CO <sub>2</sub> /m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-1 CO <sub>2</sub> E           CO <sub>2</sub> Emission Factor         1,877         g CO <sub>2</sub> /m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> an Emission Factor         0,033         g S-Q/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> an Emission Factors for Natural Gas, Industrial           CO <sub>2</sub> emissions         62817550.00         g CO <sub>2</sub> /m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> an Emission Factors for Natural Gas, Industrial           CO <sub>2</sub> emissions         62817550.00         g CO <sub>2</sub> /vaer         Emission Factors for Natural Gas, Industrial           CO <sub>2</sub> emissions         172.10         kg CO <sub>3</sub> /day         Emission Factors         10.43 g N <sub>2</sub> /vaer           CO <sub>4</sub> emissions         172.10         kg CO <sub>3</sub> /day         Emission Factors         10.44 g N <sub>2</sub> /Vaer           CO <sub>4</sub> emissions         0.0031 kg N <sub>2</sub> /Vaer         CM <sub>4</sub> emissions         Emission Factor         CM <sub>4</sub>				
GWP N <sub>2</sub> O         310         IPCC values           Total CQ a         25,385         ka CQ a c/day           Backer         Backer         Backer           Current Condition - IWWTF         Backer         Provided by HyLife Foods           Stationary Fuel Consumption x Emission Factor         Notes         Provided by HyLife Foods           CO 2 Emission Factor         1.877         g CO <sub>2</sub> /m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table AB-1 CO <sub>2</sub> Er           CO 2 Emission Factor         0.037         g CA <sub>2</sub> /m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table AB-2 CH <sub>4</sub> and Emission Factor for Natural Gas, Industrial           N2O Emission Factor         0.037         g CA <sub>2</sub> /m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table AB-2 CH <sub>4</sub> and Emission Factors for Natural Gas, Industrial           CO 2 emissions         62817559.00 g CO <sub>2</sub> /vear         CO <sub>4</sub> /m <sup>3</sup> Emission Factor for Natural Gas, Industrial           CO 2 emissions         172.10 kg CO 2/day         CH <sub>4</sub> /m <sup>3</sup> Emission Factor for Natural Gas, Industrial           CO 2 emissions         1104.41 g N <sub>2</sub> /Orsar         Report 1990-2009 Table AB-2 CH <sub>4</sub> and N <sub>2</sub> /Orsar           M <sub>2</sub> O emissions         1104.41 g N <sub>2</sub> /Orgar         Ch <sub>4</sub> /m <sup>3</sup> Emission Factor         0.033 kg N <sub>2</sub> /Orgar         CH <sub>4</sub> /m <sup>3</sup> Dissal usad in onalite truck for sludge bin	Total N <sub>2</sub> O	0.4088	kg N <sub>2</sub> O/day	
Total CO. g         25.85         kg CO. g view           Current Condition - IWWTF         9.266         Intrees. Co. g view         Intrees. Co. g view           Current Condition - IWWTF         Stationary Fuel Combustion         Natural Gas Usage         33.467         Provided by HyLife Foods           Emissions GHG = Fuel Consumption x Emission Factor         1.877         g CO.ym <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-1 CO, EF           CO2 Emission Factor         0.037         g CH.ym <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH, an           Emission Factor         0.037         g CA.ym <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH, an           Emission Factor         0.037         g CO.ym <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH, an           Emission Factors for Natural Gas, Industrial         0.033         g N.Q/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH, an           Emission Factor         0.033         g N.Q/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH, an           CO2 emissions         172.10         kg CG.ydey         Canada - National Inventory Report 1990-2009 Table A8-2 CH, an           M-Q emissions         1104.41         g N.Q/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-1 Emis           M-Q emissions	GWP CH <sub>4</sub>	21		IPCC values
Data         Data           Gurrent Condition - IWWTF         Stationary Fiel Combussion           Stationary Fiel Combussion         Natural Gas Usage           Emissions GHG = Fuel Consumption x Emission Factor         1,877           CO2, Emission Factor         1,877           CH, Emission Factor         0.037           GC/L, emission         62817559.00           CO2, emissions         0.0030           MAD         GC/L/Vear           CH4, emissions         0.020           MAD         GC/L/Vear           CH4, emissions         0.0200           MAD         GC/L/Vear           CH4, emissions         0.0200           MAD         GC/L/Vear           CH4, emissions         0.0200           MAD         GC/L/Vear	GWP N <sub>2</sub> O	310		IPCC values
Largent Condition - IWWTF           Stationary Fuel Combustion         Natural Gas Usage         33.467         Motes           Emissions GHG = Fuel Consumption x Emission Factor         1,877         g CO_/m <sup>3</sup> Factors for Natural Gas, Manitoba, Marketable           CO2 Emission Factor         1,877         g CO_/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-1 CO2 ET           CH4 Emission Factor         0.037         g CH//m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an Emission Factors for Natural Gas, Industrial           N_00 Emissions         62817559.00         g CO_/day         Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an Emission Factors for Natural Gas, Industrial           CO2 emissions         62817559.00         g CO_/day         Emission Factors for Natural Gas, Industrial           CO2 emissions         172.10         kg CO2/day         Emission Factor Soft Natural Gas, Industrial           CO2 emissions         0.0034         g CH./day         Emission Factor Soft Natural Gas, Industrial           M_0 emissions         1104.41         g N_0/gar         Emission Factor Soft Natural Gas, Industrial           CO2 emissions         0.0034         kg CH./day         Emission Factor           CO2 emissions         0.0034         kg CH./day         Emission Factor           N_0 O emissions         0.	Total CO <sub>2</sub> e	25,385	<u>kg CO₂e/day</u>	
Notes           Natural Gas Usage         Provided by HyLife Foods           Emissions GHG = Fuel Consumption x Emission Factor         Co.2 Emission Factor         Canada - National Inventory Report 1990-2009 Table A8-1 CO.2 Er           CO.2 Emission Factor         0.037         g CH.4/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an           Emission Factor         0.037         g CH.4/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an           Emission Factors for Natural Gas, Manitoba, Marketable         Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an           Emission Factors for Natural Gas, Industrial         Co.2 emissions         628175500 g CO.2/vear           CO.2 emissions         1722.01 kg CO.2/day         Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an           Emissions         0.033 kg CH.4/day         NyO emissions         0.033 kg CH.2/day           On-Site Transportation         NyO emissions         0.033 kg CY.2/day         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss           CO.2 Emission Factor         0.104.01 g CH2/L Erods         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss           Desel used in o		9,266	tonnes	
Natural Gas Usage         33,467         m³/year         Provided by HyLife Foods           Emissions GHG = Fuel Consumption x Emission Factor         1,877         g CO <sub>2</sub> /m³         Canada - National Inventory Report 1990-2009 Table A8-1 CO <sub>2</sub> Er           CO <sub>2</sub> Emission Factor         0.037         g CH <sub>2</sub> /m³         Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and Pactors for Natural Gas, Manitoba, Marketable           CH <sub>4</sub> Emission Factor         0.037         g CH <sub>2</sub> /m³         Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and Emission Factors for Natural Gas, Industrial           CO <sub>2</sub> emissions         62817559.00         g CO <sub>2</sub> /year         Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and Emission Factors for Natural Gas, Industrial           CO <sub>2</sub> emissions         62817559.00         g CO <sub>2</sub> /year         Emission Factors for Natural Gas, Industrial           CO <sub>2</sub> emissions         172.10         kg CO 2/day         Emission Factors for Natural Gas, Industrial           CH <sub>4</sub> emissions         0.0024 kg CH <sub>4</sub> /day         N <sub>2</sub> O emissions         0.0024 kg CH <sub>4</sub> /day           N <sub>2</sub> O emissions         0.0030 kg N <sub>2</sub> O/day         Chue and ansions         0.0030 kg N <sub>2</sub> O/day           Desel used in onsite truck for sludge bin movement         822 L/year         Provided by HyLife Foods           Emissions GHG = Fuel Consumption x Emission Factor         2,665 g CO <sub>2</sub> /L         Canada - National Invento	Current Condition - IWWTF		CO <sub>2</sub> e/year	
Emissions GHG = Fuel Consumption x Emission Factor		33,467	m <sup>3</sup> /vear	
CC2 Emission Factor       1,87/g CC2/m²       Factors for Natural Gas, Manitoba, Marketable         CH4 Emission Factor       0.037 g CH4/m³       Canada - National Inventory Report 1990-2009 Table A8-2 CH4, an Emission Factors for Natural Gas, Industrial         NyO Emission Factor       0.033 g N2O/m³       Canada - National Inventory Report 1990-2009 Table A8-2 CH4, an Emission Factors for Natural Gas, Industrial         CD2 emissions       62817559.00 g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-2 CH4, an Emission Factors for Natural Gas, Industrial         CD2 emissions       1238.28 g CL4/year       Emission Factors for Natural Gas, Industrial         CH4 emissions       0.0034 kg CH4/day       Emission Factors for Natural Gas, Industrial         Or-Site Transportation       N_2 O emissions       1104.41 g N_2O/year         N_2 O emissions       0.0030 kg N_2 O/day       On-Site Transportation         Emissions GHG = Fuel Consumption x Emission Factor       Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factor         CD2 Emission Factor       0.140 g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factor         CD2 Emission Factor       0.140 g CH4/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         CD4 Emission Factor       0.140 g CH4/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor<		,	in ryour	
CH4 Emission Factor     0.037     CH4/mi     Emission Factors for Natural Gas, Industrial       N40 Emission Factor     0.033     g N20/m <sup>3</sup> Canada - National Inventory Report 1990-2009 Table A8-2 CH4 an Emission Factors for Natural Gas, Industrial       CO2 emissions     62817559.00     g CO2/day       CO2 emissions     172.10     kg CO2/day       CH4 emissions     1723.28     g CH4/day       CH4 emissions     1233.28     g CH4/day       N20 emissions     0.0034     kg V2/day       M20 emissions     0.0034     kg V2/day       Dissel used in onsite truck for sludge bin movement     852     L/year       Provided by HyLife Foods     Provided by HyLife Foods       Emission Factor     2,663     g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss     Factors for Energy Mobile Combustion Sources, Heavy-duty Disse       Vehicles moderate control emission factor     2,663     g CO2/L       CH4 emission Factor     0.140     g CH2/L     Canada - National Inventory Report 1990-2009 Table A8-11 Emiss       CO2 emission Factor     2,663     g CO2/L     Vehicles moderate control emission factor       CH4 emission Factor     0.140     g CH2/L     Canada - National Inventory Report 1990-2009 Table A8-11 Emiss       CO2 emission Factor     0.082     g N_2O/L     Canada - National Inventory Report 1990-	CO <sub>2</sub> Emission Factor	1,877	g CO <sub>2</sub> /m <sup>3</sup>	
NgO Emission Pactor     0.033 g NgO/m²     Emission Factors for Natural Gas, Industrial       CO2 emissions     62817559.00 g CO2/year     Emission Factors for Natural Gas, Industrial       CO2 emissions     172.10 kg CO2/day       CH4 emissions     1238.28 g CH4/year       CH4 emissions     0.0034 kg CH4/day       N2O emissions     1014.41 g N2O/year       M2O emissions     0.0030 kg N2 O/day       On-Site Transportation     0.0030 kg N2 O/day       Dissel used in onsite truck for sludge bin movement     852 L/year       Emissions GHG = Fuel Consumption x Emission Factor     2.663 g CO2/L       CO2 Emission Factor     2.663 g CO2/L       CH4 Emission Factor     0.140 g CH4/L       CH4 Emission Factor     0.082 g N_2O/L       CH4 Emission Factor     0.082 g N_2O/L       CH4 Emission Factor     0.082 g N_2O/L       CO2 emissions     2268876.00 g CO2/year       CO2 emissions     2268876.00 g CO2/year       CO2 emissions     6.22 kg CO2/day       CH4 emissions     119.28 g CH4/year	CH₄ Emission Factor	0.037	g CH₄/m³	Emission Factors for Natural Gas, Industrial
CO2 emissions       172.10       kg CO2/day         CH4 emissions       1238.28 g CH4/vear         CH4 emissions       0.0034 kg CH4/day         N20 emissions       1104.41 g N20/vear         N20 emissions       0.0030 kg N2 O/day         On-Site Transportation       0.0030 kg N2 O/day         Diesel used in onsite truck for sludge bin movement       852 L/year         Provided by HyLife Foods       0.0030 kg N2 O/day         CO2 Emission Factor       2,663 g CO2/L         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 Emission Factor       2,663 g CO2/L         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 Emission Factor       0.140 g CH4/L         CH4 Emission Factor       0.140 g CH2/L         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor         CH4 Emission Factor       0.082 g N2O/L         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Pactors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor         CO2 emissions       2268876.00 g CO2/year         CO2 emissions       222 kg CO2/day	N <sub>2</sub> O Emission Factor	0.033	g N <sub>2</sub> O/m <sup>3</sup>	Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$ Emission Factors for Natural Gas, Industrial
CH4 emissions       1238.28       g CH4/year         CH4 emissions       0.0034       kg CH4/day         N2O emissions       1104.41       g N2O/year         N2O emissions       0.0030       kg N2 O/day         On-Site Transportation       0       852         Emissions GHG = Fuel Consumption x Emission Factor       2.663       g CO2/L       Provided by HyLife Foods         Emissions GHG = Fuel Consumption x Emission Factor       2.663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CQ 2 Emission Factor       2.663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Vehicles moderate control emission factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N2O Emission Factor       0.082       g N2O/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N2O Emissions       2268876.00       g CO2/Vear <td< th=""><td></td><td></td><td></td><td></td></td<>				
CH4 emissions       0.0034       kg CH4/day         N20 emissions       1104.41       g N20/year         N20 emissions       0.0030       kg N20/year         N20 emissions       0.0030       kg N20/year         On-Site Transportation       0       0         Diesel used in onsite truck for sludge bin movement       852       L/year       Provided by HyLife Foods         Emissions GHG = Fuel Consumption x Emission Factor       2,663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 Emission Factor       2,663       g CO2/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor       0.140       g CH4/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor       0.140       g CH4/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor       0.082       g N20/L       Vehicles moderate control emission factor         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 emissions       2268876.00       g C	*			
N2 O emissions       0.0030       kg N2 O/day         On-Site Transportation       Bisel used in onsite truck for sludge bin movement       852       L/year       Provided by HyLife Foods         Emissions GHG = Fuel Consumption x Emission Factor       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 Emission Factor       2,663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Vehicles moderate control emission factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Factors for Energy Mobile Combustion Sources, Heavy-duty Diese       Vehicles moderate control emission factor         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N2O Emission Factor       0.082       g N2O/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N2O Emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11	CH₄ emissions	0.0034	kg CH₄/day	
On-Site Transportation       Provided by HyLife Foods         Emissions GHG = Fuel Consumption x Emission Factor       852       L/year       Provided by HyLife Foods         Emissions GHG = Fuel Consumption x Emission Factor       2,663       g CO <sub>2</sub> /L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO <sub>2</sub> Emission Factor       2,663       g CO <sub>2</sub> /L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH <sub>4</sub> Emission Factor       0.140       g CH <sub>4</sub> /L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH <sub>4</sub> Emission Factor       0.140       g CH <sub>4</sub> /L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N <sub>2</sub> O Emission Factor       0.140       g CH <sub>4</sub> /L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor       0.082       g N <sub>2</sub> O/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N <sub>2</sub> O Emission Factor       0.082       g N <sub>2</sub> O/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor       0.082       g N <sub>2</sub> O/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         N <sub>2</sub> O Emissions       2268876.00       g CO <sub>2</sub> /year       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO <sub>2</sub> emissions       2268876.00       g CO				
Emissions GHG = Fuel Consumption x Emission Factor       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 Emission Factor       2,663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Factors for Energy Mobile Combustion Sources, Heavy-duty Diese       Vehicles moderate control emission factor         CH4 Emission Factor       0.140       g CH4/L         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         Factors for Energy Mobile Combustion Sources, Heavy-duty Diese         Vehicles moderate control emission factor         0.082       g N_2O/L         Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 emissions       2268876.00         CO2 emissions       2268876.00         CO2 emissions       6.22         Kg CO2/year         CH4 emissions       119.28         CH4 emissions       0.0003         Kg CH4/year         CH4 emissions       0.0003         Kg CH4/day	On-Site Transportation			
CO2 Emission Factor       2,663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factor         CO2 Emission Factor       2,663       g CO2/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factor         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CD2 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CD3 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CO2 Emission Factor       0.140       g CH4/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CO2 emissions       2268876.00       g CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CO2 emissions       6.22       kg CO2/year       Canada - National Inventory Report 1990-2009 Table A8-11 Emission factor         CO2 emissions       6.22       kg CO2/year       CA14       CA14	Diesel used in onsite truck for sludge bin movement	852	L/year	Provided by HyLife Foods
CO2 Emission Factor       2,663       g CO2/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         CH4 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         N20 Emission Factor       0.140       g CH4/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         CO2 emissions       0.082       g N2O/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         CO2 emissions       2268876.00       g CO2/year         CO2 emissions       2268876.00       g CO2/year         CH4 emissions       119.28       g CH4/year         CH4 emissions       119.28       g CH4/year         N2O emissions       69.86       g N2O/year	Emissions GHG = Fuel Consumption x Emission Factor			Conside National Inventory Report 1000 0000 Table to 11 Finite
CH4 Emission Factor       0.140       g CH4/L       Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor         N20 Emission Factor       0.082       g N2O/L       Canada - National Inventory Report 1990-2009 Table A8-11 Emiss         CO2 emissions       2268876.00       g CO2/year         CO2 emissions       6.22       kg CO2/day         CH4 emissions       119.28       g CH4/Vear         CH4 emissions       0.0003       kg CH4/day         N20 emissions       69.86       g N2O/Year	CO <sub>2</sub> Emission Factor	2,663	g CO <sub>2</sub> /L	Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N2O Emission Factor     0.082     g N2O/L     Factors for Energy Mobile Combustion Sources, Heavy-duty Diese Vehicles moderate control emission factor       CO2 emissions     2268876.00     g CO2/year       CO2 emissions     6.22     kg CO2/day       CH4 emissions     119.28     g CH4/year       CH4 emissions     6.9003     kg CH4/day       N2O emissions     69.86     g N2O/year	CH₄ Emission Factor	0.140	g CH₄/L	Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel
CO2 emissions         6.22 kg CO2/day           CH4 emissions         119.28 g CH4/year           CH4 emissions         0.0003 kg CH4/day           N2O emissions         69.86 g N2O/year	N <sub>2</sub> O Emission Factor			Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel
CH4 emissions         119.28 g CH4/year           CH4 emissions         0.0003 kg CH4/day           N2O emissions         69.86 g N2O/year	=		• -•	
CH4 emissions         0.0003         kg CH4/day           N2O emissions         69.86         g N2O/year	CH <sub>4</sub> emissions	119.28	g CH₄/year	
	CH₄ emissions	0.0003	kg CH₄/day	
	N <sub>2</sub> O emissions N <sub>2</sub> O emissions			
TOTAL EMISSIONS IWWTF AS CO <sub>2</sub> EQUIVALENT	-		~~~	
Total CO2         178.32 kg CO2/day	Total CO <sub>2</sub>	178.32	kg CO₂/day	
Total CH <sub>4</sub> 0.004 kg CH <sub>4</sub> /day	Total CH <sub>4</sub>	0.004	kg CH₄/day	
Total N <sub>2</sub> O 0.0032 kg N <sub>2</sub> O/day	Total N <sub>2</sub> O	0.0032	kg N <sub>2</sub> O/day	
GWP CH <sub>4</sub> 21         IPCC values	GWP CH <sub>4</sub>			
GWP N <sub>2</sub> O 310 IPCC values			I	IPCC values
<u>Total CO2e</u> <u>179 kg CO2e/day</u>	GWP N <sub>2</sub> O	310		
<u>65</u> tonnes CO <sub>2</sub> e/year				
		<u>179</u>	<u>kg CO₂e/day</u>	

TAB-2013-05-08-2013 HyLife and R3 GHG Inventory-60278554.xls

Calculations based	I on 2006 IPCC Guidelines for National Greenhouse Gas Inventories	
Oulculations based		

Stationary Fuel Combustion Natural Gas Usage - building and process heat			
	4,500,000	m <sup>3</sup> /year	Notes Provided by HyLife Foods
Emissions GHG = Fuel Consumption x Emission Factor			
CO <sub>2</sub> Emission Factor	1,877	g CO <sub>2</sub> /m <sup>3</sup>	Canada - National Inventory Report 1990-2009 Table A8-1 $CO_2$ Emission Factors for Natural Gas, Manitoba, Marketable
CH₄ Emission Factor	0.037	g CH₄/m³	Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$ Emission Factors for Natural Gas, Industrial
N <sub>2</sub> O Emission Factor	0.033	g N <sub>2</sub> O/m <sup>3</sup>	Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial
CO <sub>2</sub> emissions	8446500000.00		
CO <sub>2</sub> emissions CH <sub>4</sub> emissions		<b>kg CO₂/day</b> g CH₄/year	
CH <sub>4</sub> emissions		kg CH₄/day	
N <sub>2</sub> O emissions N <sub>2</sub> O emissions		g N <sub>2</sub> O/year <b>kg N <sub>2</sub> O/day</b>	
Industrial Process	0.41	Ng N <sub>2</sub> O/day	
Live hog population	4,000	hogs	Maximum capacity of the holding facility is 4,000 hogs - barn is emptied and filled throughout the day but live hog population never exceeds this. As wastewater from holding facility is transferred to IWWTF for treatment, manure management emissions are anticipated to be negligible
Emissions GHG = Live hog population x Emission Factor CH <sub>4</sub> Emission Factor	1.5	kg	Canada - National Inventory Report 1990-2009 Table A8-22 Methane Emission Factors for Enteric Fermentation for Non-cattle Animals, Pigs >60
		CH₄/nead/year	kg emission factors are available for $CO_2$ and $N_2O$ emissions from enteric
CH <sub>4</sub> emissions		kg CH₄/year	fermentation
CH <sub>4</sub> emissions CO <sub>2</sub> Use (Dry Ice and Stunning)		kg CH₄/day kg CO₂/year	Provided by Hyl ife Foods
CO <sub>2</sub> ose (by ite and stufning)		kg CO <sub>2</sub> /year	Provided by HyLife Foods
On-Site Transportation Diesel used in Skid Steer	175	L/week	Provided by HyLife Foods
	170		
Emissions GHG = Fuel Consumption x Emission Factor			Canada - National Inventory Report 1990-2009 Table A8-11 Emission
CO₂ Emission Factor CH₄ Emission Factor		g CO₂/L g CH₄/L	Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel
			Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission
N <sub>2</sub> O Emission Factor CO <sub>2</sub> emissions		g N <sub>2</sub> O/L g CO <sub>2</sub> /week	Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
CO <sub>2</sub> emissions		kg CO <sub>2</sub> /week	
CH <sub>4</sub> emissions		g CH₄/week	
CH₄ emissions N₂O emissions		<b>kg CH₄/day</b> g N₂O/week	
N <sub>2</sub> O emissions		kg N <sub>2</sub> O/week	
TOTAL EMISSIONS HYLIFE FOODS AS CO2 EQUIVALENT		1 3 1 3 7	
Total CO <sub>2</sub>	25801.46	kg CO <sub>2</sub> /day	
Total CH <sub>4</sub>		kg CH₄/day	
Total N <sub>2</sub> O	0.4089	kg N <sub>2</sub> O/day	
GWP CH <sub>4</sub>	21		IPCC values
GWP N <sub>2</sub> O	310	)	IPCC values
<u></u>	<u>26,283</u> 9,593	<u>kg CO 2 e/day</u> <u>tonnes</u> CO 2 e/year	
Proposed Condition - IWWTF		CO2e/year	
Stationary Fuel Combustion		2	Notes
Natural Gas Usage Emissions GHG = Fuel Consumption x Emission Factor	33,467	m³/year	Provided by HyLife Foods - no change in annual consumption anticipated
Emissions GHG = Fuel Consumption x Emission Factor			
CO <sub>2</sub> Emission Factor	1,877	g CO <sub>2</sub> /m <sup>3</sup>	Canada - National Inventory Report 1990-2009 Table A8-1 CO <sub>2</sub> Emission Factors for Natural Gas, Manitoba, Marketable
CH. Emission Easter			Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O
CH <sub>4</sub> Emission Factor N <sub>2</sub> O Emission Factor	0.037	g CH₄/m³ a N₂O/m³	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$
	0.037	g N <sub>2</sub> O/m <sup>3</sup>	Emission Factors for Natural Gas, Industrial
N <sub>2</sub> O Emission Factor CO <sub>2</sub> emissions CO <sub>2</sub> emissions	0.037 0.033 62817559.00 <b>172.10</b>	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO <sub>2</sub>/day</b>	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$
N <sub>2</sub> O Emission Factor CO <sub>2</sub> emissions CO <sub>2</sub> emissions CH <sub>4</sub> emissions	0.037 0.033 62817559.00 <b>172.10</b> 1238.28	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO _/day</b> g CH <sub>4</sub> /year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$
N <sub>2</sub> O Emission Factor CO <sub>2</sub> emissions CO <sub>2</sub> emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO <sub>2</sub>/day</b>	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$
N2O Emission Factor         CO2 emissions         CO2 emissions         CO4 emissions         CH4 emissions         CH4 emissions         N2O emissions         N2O emissions	0.037 0.033 62817559.00 <b>172.10</b> 1238.28 <b>0.0034</b> 1104.41	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO 2/day</b> g CH <sub>4</sub> /year <b>kg CH 4/yea</b> r	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$
N2O Emission Factor         CO2 emissions         CO2 emissions         CO4 emissions         CH4 emissions         CH4 emissions         N2O emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO 2 /day</b> g CH <sub>4</sub> /year <b>kg CH 4 /day</b> g N <sub>2</sub> O/year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 $CH_4$ and $N_2O$
N2O Emission Factor         CO2 emissions         CO2 emissions         CO2 emissions         CH4 emissions         CH4 emissions         CH4 emissions         N2O emissions         N2O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO 2/day g CH <sub>4</sub> /year kg CH 4/day g N <sub>2</sub> O/year kg N 2 O/day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial
N2O Emission Factor         CO2 emissions         CO2 emissions         CH4 emissions         CH4 emissions         N2O emissions         N2O emissions         On-Site Transportation	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO 2/day g CH <sub>4</sub> /year kg CH 4/day g N <sub>2</sub> O/year kg N 2 O/day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N2O Emission Factor         CO2 emissions         CO2 emissions         CO2 emissions         CH4 emissions         CH2 emissions         N2O emissions         N2O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel
N <sub>2</sub> O Emission Factor         CO <sub>2</sub> emissions         CO <sub>2</sub> emissions         CH <sub>4</sub> emissions         CH <sub>4</sub> emissions         N <sub>2</sub> O emissions         N <sub>2</sub> O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO <sub>2</sub> Emission Factor         CH <sub>4</sub> Emission Factor         CH <sub>4</sub> Emission Factor         N <sub>2</sub> O Emission Factor	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CH <sub>4</sub> /year <b>kg CH _ /day</b> g N <sub>2</sub> O/year <b>kg N _ O/day</b> L/year g CO <sub>2</sub> /L g CH <sub>4</sub> /L g N <sub>2</sub> O/L	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N2O Emission Factor         CO2 emissions         CO2 emissions         CH4 emissions         CH4 emissions         N2O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO2 Emission Factor         CH4 Emission Factor         N2O Emission Factor         CO2 emission Factor         CO2 emission Factor	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CH <sub>4</sub> /year <b>kg CH _ /day</b> g N <sub>2</sub> O/year <b>kg N _ O/day</b> L/year g CO <sub>2</sub> /L g CH <sub>4</sub> /L g N <sub>2</sub> O/L g CO <sub>2</sub> /year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emissions         CH₄ emissions         CH₄ emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emissions         CO₂ emissions         CO₂ emissions         CO₂ emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 0.140 0.082 3062450.00 8.39 161.00	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CH <sub>4</sub> /year <b>kg CH _ /day</b> g N <sub>2</sub> O/year <b>kg N _ O/day</b> L/year g CO <sub>2</sub> /L g CH <sub>4</sub> /L g N <sub>2</sub> O/L g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CO <sub>2</sub> /year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N2O Emission Factor         CO2 emissions         CO2 emissions         CO2 emissions         CH4 emissions         CH2O emissions         N2O emissions         N2O emissions         N2O emissions         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO2 Emission Factor         CO2 Emission Factor         CH4 Emission Factor         CO2 emissions         CO2 emissions         CO2 emissions         CO3 Emission Factor         CO3 Emission Factor         CO4 emissions         CO3 Emission Factor	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year $kg CO_2/day$ g CH <sub>4</sub> /year $kg CH_4/day$ g N <sub>2</sub> O/year $kg N_2 O/day$ L/year g CO <sub>2</sub> /L g CH <sub>4</sub> /L g N <sub>2</sub> O/L g CO <sub>2</sub> /year $kg CO_2/day$ g CO <sub>2</sub> /year $kg CO_2/day$	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emissions         CH₄ emissions         CH₄ emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emissions         CO₂ emissions         CO₂ emissions         CO₂ emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CH <sub>4</sub> /year <b>kg CH _ /day</b> g N <sub>2</sub> O/year <b>kg N _ O/day</b> L/year g CO <sub>2</sub> /L g CH <sub>4</sub> /L g N <sub>2</sub> O/L g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CO <sub>2</sub> /year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emissions         CH₄ emissions         N₂O emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions         CO₂ emissions   <	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CH <sub>4</sub> /year <b>kg CH _ /day</b> g N <sub>2</sub> O/year <b>kg N _ O/day</b> L/year g CO <sub>2</sub> /L g CH <sub>4</sub> /L g N <sub>2</sub> O/L g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CO <sub>2</sub> /year <b>kg CO _ /day</b> g CO <sub>2</sub> /year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emissions         CH₄ emissions         N₂O emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions         N₂O emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0003	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day L/year g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CA <sub>4</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CH₄ emissions         CH₄ emissions         N₂O emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0003 180.49 0.0004	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day L/year g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /year kg CO <sub>2</sub> /year kg CO <sub>2</sub> /year kg CO <sub>4</sub> /year kg CO <sub>4</sub> /year kg CA <sub>4</sub> /day g N <sub>2</sub> O/day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CH₄ emissions         CH₄ emissions         N₂O emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions         CH₄ emissions         N₂O emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0003 180.49 0.0004	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day L/year g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CO <sub>2</sub> /day g N <sub>2</sub> O/year	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CH₄ emissions         CH₄ emissions         N₂O emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0003 180.49 0.0004	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /day g N <sub>2</sub> O/year kg CO <sub>2</sub> /day kg CH <sub>4</sub> /day kg CO <sub>2</sub> /day kg CO <sub>2</sub> /day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N₂O Emission Factor         CO₂ emissions         CO₂ emissions         CH₄ emissions         CH₄ emissions         N₂O emissions         N₂O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO₂ Emission Factor         CO₂ Emission Factor         CO₂ emissions         CO₂ emissions         CO₂ emission Factor         CO₂ emissions         N₂O emissions         N₂O emissions <t< td=""><td>0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0003 180.49 0.004</td><td>g N<sub>2</sub>O/m<sup>3</sup> g CO<sub>2</sub>/year kg CO<sub>2</sub>/day g CH<sub>4</sub>/year kg CH<sub>4</sub>/day g N<sub>2</sub>O/year kg N<sub>2</sub> O/day L/year g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/year kg CO<sub>2</sub>/day g CH<sub>4</sub>/day g N<sub>2</sub>O/year kg CH<sub>4</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day</td><td>Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH<sub>4</sub> and N<sub>2</sub>O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor</td></t<>	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0003 180.49 0.004	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day L/year g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /day g N <sub>2</sub> O/year kg CH <sub>4</sub> /day kg CO <sub>2</sub> /day kg CO <sub>2</sub> /day kg CO <sub>2</sub> /day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial Provided by HyLife Foods Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor Canada - National Inventory Report 1990-2009 Table A8-11 Emission Factors for Energy Mobile Combustion Sources, Heavy-duty Diesel Vehicles moderate control emission factor
N2O Emission Factor           CO2 emissions           CO2 emissions           CH4 emissions           CH4 emissions           N2O emissions           N2O emissions           N2O emissions           N2O emissions           N2O emissions           CO2 emissions           N2O emissions           N2O emissions           CO2 emissions GHG = Fuel Consumption x Emission Factor           CO2 Emission Factor           CO2 Emission Factor           CO2 emissions           CO3 emissions           N2O emissions           M2O emissions           M2O emissions<	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0004 94.30 0.0004 94.30 0.0003 180.49 0.004 0.0033 21 310	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /year kg CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg CH <sub>4</sub> /day kg CO <sub>2</sub> /day kg CO <sub>2</sub> /day kg CO <sub>2</sub> /day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial
N <sub>2</sub> O Emission Factor         CO <sub>2</sub> emissions         CO <sub>2</sub> emissions         CH <sub>4</sub> emissions         CH <sub>4</sub> emissions         N <sub>2</sub> O emissions         On-Site Transportation         Diesel used in onsite truck for sludge bin movement         Emissions GHG = Fuel Consumption x Emission Factor         CO <sub>2</sub> Emission Factor         CO <sub>2</sub> Emission Factor         CO <sub>2</sub> emissions         CO <sub>2</sub> emission Factor         CO <sub>2</sub> emission Factor         CO <sub>2</sub> emissions         CO <sub>2</sub> emissions         CO <sub>2</sub> emissions         CO <sub>2</sub> emission Factor         CO <sub>2</sub> emissions         N <sub>2</sub> O emissions         N <sub>2</sub> O emissions <td>0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0004 94.30 0.0004 94.30 0.0003 180.49 0.004 0.0033 21 310</td> <td>g N<sub>2</sub>O/m<sup>3</sup> g CO<sub>2</sub>/year kg CO<sub>2</sub>/day g CH<sub>4</sub>/year kg CH<sub>4</sub>/day g N<sub>2</sub>O/year kg N<sub>2</sub> O/day L/year g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/L g CO<sub>2</sub>/year kg CO<sub>2</sub>/day g CH<sub>4</sub>/year kg CO<sub>2</sub>/day g CH<sub>4</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day kg CO<sub>2</sub>/day</td> <td>Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH<sub>4</sub> and N<sub>2</sub>O Emission Factors for Natural Gas, Industrial</td>	0.037 0.033 62817559.00 172.10 1238.28 0.0034 1104.41 0.0030 1,150 2,663 0.140 0.082 3062450.00 8.39 161.00 0.0004 94.30 0.0004 94.30 0.0004 94.30 0.0003 180.49 0.004 0.0033 21 310	g N <sub>2</sub> O/m <sup>3</sup> g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CH <sub>4</sub> /day g N <sub>2</sub> O/year kg N <sub>2</sub> O/day L/year g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /L g CO <sub>2</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /year kg CO <sub>2</sub> /day g CH <sub>4</sub> /day kg CO <sub>2</sub> /day	Emission Factors for Natural Gas, Industrial Canada - National Inventory Report 1990-2009 Table A8-2 CH <sub>4</sub> and N <sub>2</sub> O Emission Factors for Natural Gas, Industrial