ATTACHMENT A

On-site Ambient Monitoring Report

Jacques Whitford

Jacques Whitford

Environmental
Engineering
Scientific
Management
Consultants

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Markham ON
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Bus 905 474 7700
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www.jacqueswhitford.com

VIA E-MAIL

Project No.: 1043706

December 19, 2008

Linda Wrong
Labrador Iron Mines Limited
220 Bay Street, Suite 700
Toronto, Ontario
M5J 2W4

Dear Linda,

Re: Summary of Ambient Monitoring – Schefferville, Quebec
September to November 2008

This report summarizes the results of ambient air monitoring conducted by Jacques Whitford Limited for the period between September 11, 2008 and November 11, 2008 at the Silver Yards site near the James North Mine and Schefferville, Quebec. Labrador Iron Mines (LIM) is intending on using this property as the beneficiation area for an iron ore mining operation beginning in the spring of 2009. Due to the potential fugitive dust emissions present during the ore beneficiation operations and the proposed mine operations in the area, a baseline of particulate matter concentrations was requested.

The site is located approximately 3.5 km from the town of Schefferville, away from any major industry or emissions sources. The public roads to access the site are all unpaved, and could be used by both LIM personnel and local residents. A mobile ore crusher was being used on-site for some initial ore crushing as part of the 2008 exploration program during the ambient monitoring period.

MONITORING METHODOLOGY

Total Suspended Particulate (TSP) sampling was conducted following the Ontario Ministry of the Environment (MOE) Operation Manual for Point Source Air Quality Monitoring and U.S. Environmental Protection Agency (U.S. EPA) Procedures, for 24-hour periods. A sampling frequency of one sample every six days was attempted, although due to operator error and local weather conditions, there were some modifications that were deemed necessary to the original schedule.

The beneficiation area is located in a natural valley oriented from the north-west to the south-east. The sides of the valley reach peaks approximately 650 m high, with the beneficiation area located at an elevation of approximately 530 m. The beneficiation area is approximately 500 m from the highest point of the valley on either side. One air sampler was located 25 m south-east from where the mobile crusher was operating, 150 m west from the main road onto the site, and 50 m west from an on-site unpaved road. The sampler was located on a rise of the south-west side of the valley floor, approximately 8 m above the crushing area, and at grade with the onsite road. A site map showing the location of the LIM site and the monitoring station is presented in Attachment A and photos of the site are presented in Attachment B

Ambient suspended particulate matter was collected onto pre-weighed, conditioned quartz fibre filters for a 24-hour period using a BGI Incorporated portable particulate monitor (model PQ100). The PQ100 operates by continuously drawing ambient air through a filter onto which particulate matter is deposited. After a pre-determined period of time (24-hours), a measurable amount of particulate is deposited on the filter. The exposed filters were collected and transported to a laboratory (Maxxam Analytics Inc.) where the filters were conditioned then weighed to determine the mass of deposited particulate. The particulate on the filter was subsequently analyzed for metals content using an Inductively Coupled Plasma (ICP) analytical technique. Operation of these instruments required changing of the filters on a six-day basis.

METEOROLOGICAL DATA

The meteorological data used in this report was obtained from Environment Canada for the Schefferville Airport. The hourly average meteorological data (atmospheric pressure, temperature, wind speed and wind direction) were averaged over each 24-hour sampling period for use in the PQ100 flow rate calculations and analysis.

RESULTS

Detailed monitoring results for TSP and metals are presented in Attachment C.

TSP MONITORING RESULTS

Table 1 presents the maximum and minimum TSP concentrations measured during the sampling period at the site. All samples from the site were below the Newfoundland and Labrador Department of Environment and Conservation (NL DEC) ambient air quality standard for TSP (120 µg/m^3).

To estimate the potential contribution of onsite crushing emissions to the measured TSP data at the monitoring station, the directionality of the wind during each sample period was examined. A TSP pollution rose for the site is presented as Figure 1. This figure plots the maximum measured particulate concentration in wind sectors of 22.5 degree increments.

The analysis of the TSP results and on-site conditions indicate that the highest TSP concentration measured at the site (42 µg/m^3) was from the west. During this measurement, the sampler was upwind of both the exploration crushing operations and the ore piles, although the mobile crusher was not operating during this sampling event. The next highest TSP concentration (28 µg/m^3) was also from the west.

Two measurements were taken while the wind direction was predominantly from the east, which would give an indication of localized ambient particulate levels. In both cases (samples from September 29, 2008 and October 29, 2008), the measured TSP concentration was 21 µg/m^3.

METALS RESULTS

The measured ambient metals concentrations for the monitoring station are presented in Attachment C. A total of nine metals were analysed for each of the eight samples collected during the monitoring period. There are no NL DEC standards for metals, so Ontario MOE criteria were used where applicable.

Table 2 summarizes the data for the analysed metals at the site. The majority of samples had metals concentrations below the laboratory detection limit and all measured concentrations were well below the relevant MOE criteria (less than 10%).

CONCLUSIONS

The following conclusions were made from the ambient monitoring data at the LIM site:

- All measured ambient TSP samples were below the NL DEC air quality 24-hour standard for TSP;
- All measured ambient metals samples were below the relevant Ontario MOE air quality criteria;
- The highest measured TSP concentrations at the site occurred when the mobile ore crusher was not operating;
- Measurements that were taken during days when the predominant wind direction was from the east indicate ambient TSP concentrations to be approximately 21 µg/m^3; and,
- Samples taken during the crushing operations were below the NL DEC air quality 24-hour standard for TSP.

CLOSURE

The assessment represents the conditions at the subject property at the time of the monitoring. The conclusions presented herein represent the best judgment of the assessor based on current environmental standards.

Should you have any questions, please do not hesitate to contact me at (905) 474-7700, Fax: (905) 479-9326 or my E-mail at ddsouza@jacqueswhitford.com at your convenience.

Yours truly,

JACQUES WHITFORD LIMITED

Original signed by: ***Orginial signed by:***

Don D'Souza, B.A.Sc.
Project Scientist

Ben Coulson, P. Eng., M.A.Sc.
Group Leader

cc: Dana Feltham, Jacques Whitford Limited

Enclosures: Tables 1-2
Figure 1
Attachment A: Site Plan
Attachment B: Photographs
Attachment C: Air Quality Monitoring Analyses

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Table 1 Summary of TSP Monitoring Results - Silver Yards ambient monitoring

Sampling Date	TSP[1]	WS	WD	Temp	% of TSP Standard[1]	Activities in vicinity of sampler
(mm/dd/yyyy)	(µg/m3)	(km/hr)	(°) (Direction)	(°C)		
9/11/2008	10	16	264 (W)	8.3	9%	Crusher Operating
9/23/2008	10	19	307 (NW)	1.4	9%	Crusher Operating
9/29/2008	21	14	59 (NE)	3.2	17%	N/A
10/18/2008	28	15	292 (NW)	-3.7	23%	Hauling ore from Silver Yards
10/23/2008	28	19	268 (W)	-0.9	23%	N/A
10/29/2008	21	21	145 (SE)	6.2	17%	N/A
11/4/2008	10	13	238 (SW)	-4.0	9%	N/A
11/10/2008	42	7	279 (W)	-0.2	35%	N/A
# of Samples	8					
Minimum	10				9%	
Maximum	42				35%	
Average	21				18%	

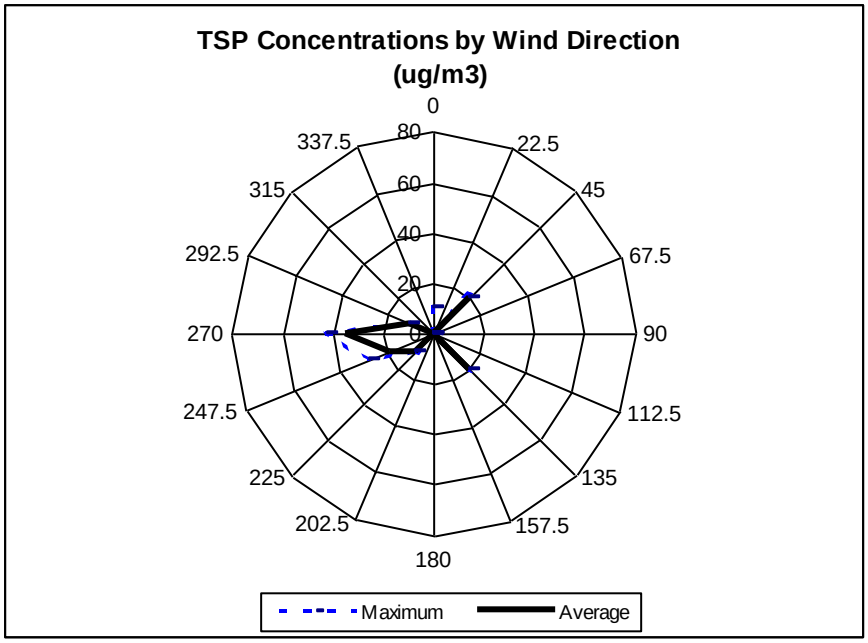
Notes:
The results from 11/4/2008 and 11/10/2008 are preliminary and subject to change. Maxxam Analytics will provide finalized results at a later date.
1 – NL DEC Standard for TSP is 120 µg/m^3

Table 2 Metal Results for Silver Yards Ambient Monitoring

Site ID	Metal	Maximum Concentration (µg/m3)	Minimum Concentration (µg/m3)	Mean Concentration (µg/m3)	MOE[1] Criteria (µg/m3)	% of MOE Criteria (using Maximum Concentration)
Silver Yards	Antimony	0.03	0.03	0.03	25	<1%
	Arsenic	0.02	0.02	0.02	0.3	7%
	Bismuth	0.02	0.02	0.02	N/A	N/A
	Phosphorus	0.09	0.09	0.09	N/A	N/A
	Selenium	0.03	0.03	0.03	10	<1%
	Silicon	1.90	0.83	1.39	N/A	N/A
	Sulphur	0.33	0.09	0.19	N/A	N/A
	Uranium	0.53	0.10	0.17	N/A	N/A
	Zirconium	0.01	0.003	0.00	N/A	N/A

Notes:
There are no NL DEC standards for ambient metals concentrations. Ontario MOE criteria were used where applicable.

Figure 1: TSP Pollution Rose



Attachment A

Site Map Showing Monitoring Station Locations

Jacques Whitford

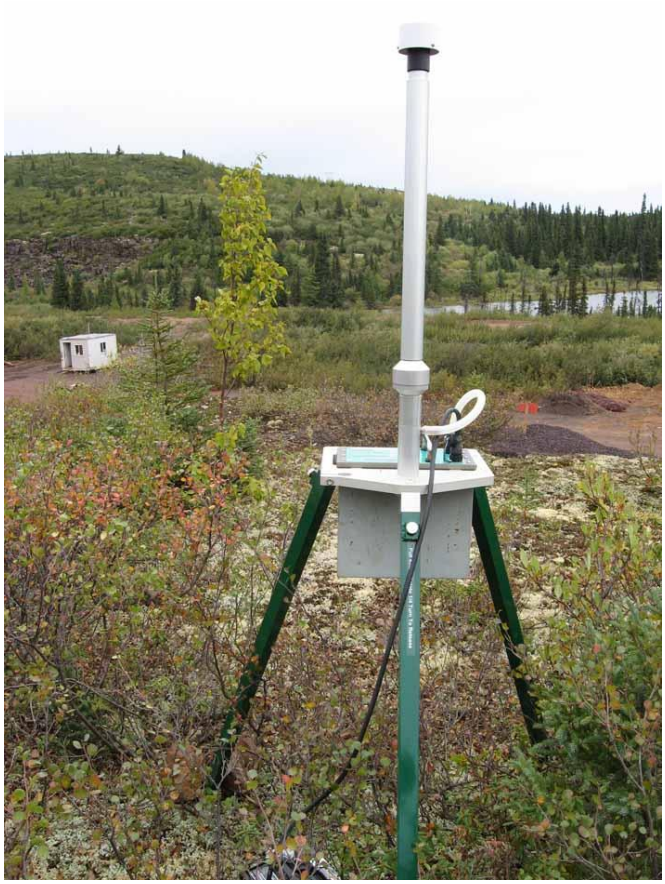
Reference: Google Earth, 2008

Attachment B

Monitoring Station Photos

Jacques Whitford

Photograph 1: View of Sampler Location (facing north-east)



Photograph 2: View of Sampler Location (facing north-west)

Photograph 3: In front of Sampler Location (facing east)

Jacques Whitford

Attachment C

Air Quality Monitoring Analyses

Jacques Whitford

Your P.O. #: NSD016400
Your Project #: 1043706 PHASE Z9100
Site:LIM
Your C.O.C. #: EO223608

Attention: Don D'Souza
Jacques Whitford Limited
7271 Warden Ave
Markham, ON
L3R 5X5

Report Date: 2008/11/19

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A8D0558
Received: 2008/11/05, 10:24

Sample Matrix: Filter
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Total Metals on Low-Vol Filter(6010Bmod) (1,2)	4	2008/11/11	2008/11/11	BRL SOP-00100 / BRL SOP-00102	EPA 6010Bmod
Particulates on Filter (M5/315/NJATM1) (1,2)	4	N/A	2008/11/11	BRL SOP-00109	EPA 5/315/NJATM1

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Analytics Mississauga
(2) This test was performed in Maxxam Mississauga under Maxxam Burlington SCC Accreditation

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

THERESA STEPHENSON, Project Manager
Email: Theresa.Stephenson@MaxxamAnalytics.com
Phone# (905) 817-5763

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

Maxxam Job #: A8D0558
Report Date: 2008/11/19

Jacques Whitford Limited
Client Project #: 1043706 PHASE Z9100
Project name: LIM
Your P.O. #: NSD016400

RESULTS OF ANALYSES OF FILTER

Maxxam ID		AZ1571	AZ1572	AZ1573	AZ1574		
Sampling Date		2008/09/11	2008/09/23	2008/09/29	2008/09/18		
COC Number		EO223608	EO223608	EO223608	EO223608		
	Units	**8090402**	**8090409**	**8090410**	**8090403**	**RDL**	**QC Batch**
Particulate Weight on Filter	mg	<0.30	<0.30	0.30	0.40	0.30	1668753

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A8D0558
Report Date: 2008/11/19

Jacques Whitford Limited
Client Project #: 1043706 PHASE Z9100
Project name: LIM
Your P.O. #: NSD016400

MISCELLANEOUS (FILTER)

Maxxam ID		AZ1571	AZ1572	AZ1573	AZ1574		
Sampling Date		2008/09/11	2008/09/23	2008/09/29	2008/09/18		
COC Number		EO223608	EO223608	EO223608	EO223608		
	Units	**8090402**	**8090409**	**8090410**	**8090403**	**RDL**	**QC Batch**
Metals							
Antimony (Sb)	ug	<1.0	<1.0	<1.0	<1.0	1.0	1669114
Arsenic (As)	ug	<0.60	<0.60	<0.60	<0.60	0.60	1669114
Bismuth (Bi)	ug	<0.60	<0.60	<0.60	<0.60	0.60	1669114
Phosphorus (P)	ug	<2.5	<2.5	<2.5	<2.5	2.5	1669114
Selenium (Se)	ug	<1.0	<1.0	<1.0	<1.0	1.0	1669114
Silicon (Si)	ug	18.1	18.8	12.0	16.8	1.0	1669114
Sulphur (S)	ug	3.4	<2.5	<2.5	<2.5	2.5	1669114
Uranium (U)	ug	<3.0	<3.0	<3.0	<3.0	3.0	1669114
Zirconium (Zr)	ug	<0.10	<0.10	<0.10	<0.10	0.10	1669114

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A8D0558
Report Date: 2008/11/19

Jacques Whitford Limited
Client Project #: 1043706 PHASE Z9100
Project name: LIM
Your P.O. #: NSD016400

GENERAL COMMENTS

Results relate only to the items tested.

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Jacques Whitford Limited
Attention: Don D'Souza
Client Project #: 1043706 PHASE Z9100
P.O. #: NSD016400
Project name: LIM

Quality Assurance Report

Maxxam Job Number: GA8D0558

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1669114	KCO	Spiked Blank	Antimony (Sb)	2008/11/11		108	%	85 - 115
		RPD	Antimony (Sb)	2008/11/11	3.9		%	20
		Spiked Blank	Arsenic (As)	2008/11/11		105	%	85 - 115
		RPD	Arsenic (As)	2008/11/11	4.0		%	20
		Spiked Blank	Bismuth (Bi)	2008/11/11		104	%	85 - 115
		RPD	Bismuth (Bi)	2008/11/11	2.9		%	20
		Spiked Blank	Phosphorus (P)	2008/11/11		104	%	85 - 115
		RPD	Phosphorus (P)	2008/11/11	0.08		%	20
		Spiked Blank	Selenium (Se)	2008/11/11		103	%	85 - 115
		RPD	Selenium (Se)	2008/11/11	0.4		%	20
		Spiked Blank	Silicon (Si)	2008/11/11		103	%	85 - 115
		RPD	Silicon (Si)	2008/11/11	0.5		%	20
		Spiked Blank	Sulphur (S)	2008/11/11		101	%	85 - 115
		RPD	Sulphur (S)	2008/11/11	0.3		%	20
		Spiked Blank	Uranium (U)	2008/11/11		105	%	85 - 115
		RPD	Uranium (U)	2008/11/11	2.8		%	20
		Spiked Blank	Zirconium (Zr)	2008/11/11		101	%	85 - 115
		RPD	Zirconium (Zr)	2008/11/11	0.4		%	20
		Method Blank	Antimony (Sb)	2008/11/11	<1.0		ug	
			Arsenic (As)	2008/11/11	<0.60		ug	
			Bismuth (Bi)	2008/11/11	<0.60		ug	
			Phosphorus (P)	2008/11/11	<2.5		ug	
			Selenium (Se)	2008/11/11	<1.0		ug	
			Silicon (Si)	2008/11/11	<1.0		ug	
			Sulphur (S)	2008/11/11	<2.5		ug	
			Uranium (U)	2008/11/11	<3.0		ug	
			Zirconium (Zr)	2008/11/11	<0.10		ug	

RPD = Relative Percent Difference
SPIKE = Fortified sample

This document is in electronic format, hard copy is available on request.

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Validation Signature Page

Maxxam Job #: A8D0558

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

FRANK MO, B.Sc., Inorganic Lab. Manager

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

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Your Project #: 1043706,Z9100
Site:SCHEFFERVILLE
Your C.O.C. #: EO227308

Attention: Don D'Souza
Jacques Whitford Limited
7271 Warden Ave
Markham, ON
L3R 5X5

Report Date: 2008/12/04

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: A8D6812
Received: 2008/11/18, 13:13

Sample Matrix: Filter
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Total Metals on Low-Vol Filter(6010Bmod) (1)	2	2008/12/02	2008/12/03	BRL SOP-00100 / BRL SOP-00102	EPA 6010Bmod
Particulates on Filter (M5/315/NJATM1) (1)	2	N/A	2008/12/02	BRL SOP-00109	EPA 5/315/NJATM1

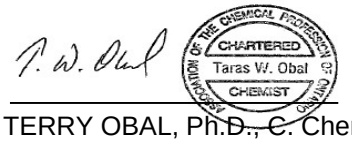
(1) This test was performed in Maxxam Mississauga under Maxxam Burlington SCC Accreditation

MAXXAM ANALYTICS

THERESA STEPHENSON
Project Manager

TDS/poh
encl.

Authorized By :



TERRY OBAL, Ph.D., C. Chem
Manager, Scientific Services

Total cover pages: 1

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Maxxam Job #: A8D6812
Report Date: 2008/12/04

Jacques Whitford Limited
Client Project #: 1043706,Z9100
Project name: SCHEFFERVILLE

RESULTS OF ANALYSES OF FILTER

Maxxam ID		BC2709	BC2710		
Sampling Date		2008/10/29	2008/11/09		
COC Number		EO227308	EO227308		
	Units	**8090407**	**8090406**	**DL**	**QC Batch**
Particulate Weight on Filter	mg	0.30	0.40	0.30	1688596

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: A8D6812
Report Date: 2008/12/04

Jacques Whitford Limited
Client Project #: 1043706,Z9100
Project name: SCHEFFERVILLE

MISCELLANEOUS (FILTER)

Maxxam ID		BC2709	BC2710		
Sampling Date		2008/10/29	2008/11/09		
COC Number		EO227308	EO227308		
	Units	**8090407**	**8090406**	**DL**	**QC Batch**
Antimony (Sb)	ug	<1.0	<1.0	1.0	1689225
Arsenic (As)	ug	<0.60	<0.60	0.60	1689225
Bismuth (Bi)	ug	<0.60	<0.60	0.60	1689225
Phosphorus (P)	ug	<2.5	<2.5	2.5	1689225
Selenium (Se)	ug	<1.0	<1.0	1.0	1689225
Silicon (Si)	ug	27.3	27.4	1.0	1689225
Sulphur (S)	ug	4.5	4.8	2.5	1689225
Uranium (U)	ug	7.6	<3.0	3.0	1689225
Zirconium (Zr)	ug	0.11	<0.10	0.10	1689225

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: A8D6812
Report Date: 2008/12/04

Jacques Whitford Limited
Client Project #: 1043706,Z9100
Project name: SCHEFFERVILLE

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Jacques Whitford Limited
Attention: Don D'Souza
Client Project #: 1043706,Z9100
P.O. #:
Project name: SCHEFFERVILLE

Quality Assurance Report

Maxxam Job Number: GA8D6812

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
1689225	KCO	Spiked Blank	Antimony (Sb)	2008/12/03		107	%	85 - 115
		RPD	Antimony (Sb)	2008/12/02	4.5		%	20
		Spiked Blank	Arsenic (As)	2008/12/03		95	%	85 - 115
		RPD	Arsenic (As)	2008/12/02	5.3		%	20
		Spiked Blank	Bismuth (Bi)	2008/12/03		98	%	85 - 115
		RPD	Bismuth (Bi)	2008/12/02	9.1		%	20
		Spiked Blank	Phosphorus (P)	2008/12/03		100	%	85 - 115
		RPD	Phosphorus (P)	2008/12/02	1.0		%	20
		Spiked Blank	Selenium (Se)	2008/12/03		100	%	85 - 115
		RPD	Selenium (Se)	2008/12/02	2.6		%	20
		Spiked Blank	Silicon (Si)	2008/12/03		97	%	85 - 115
		RPD	Silicon (Si)	2008/12/02	2.9		%	20
		Spiked Blank	Sulphur (S)	2008/12/03		101	%	85 - 115
		RPD	Sulphur (S)	2008/12/02	0.9		%	20
		Spiked Blank	Uranium (U)	2008/12/03		98	%	85 - 115
		RPD	Uranium (U)	2008/12/02	8.4		%	20
		Spiked Blank	Zirconium (Zr)	2008/12/03		102	%	85 - 115
		RPD	Zirconium (Zr)	2008/12/02	1.1		%	20
		Method Blank	Antimony (Sb)	2008/12/02	<1.0		ug	
			Arsenic (As)	2008/12/02	<0.60		ug	
			Bismuth (Bi)	2008/12/02	<0.60		ug	
			Phosphorus (P)	2008/12/02	<2.5		ug	
			Selenium (Se)	2008/12/02	<1.0		ug	
			Silicon (Si)	2008/12/02	<1.0		ug	
			Sulphur (S)	2008/12/02	<2.5		ug	
			Uranium (U)	2008/12/02	<3.0		ug	
			Zirconium (Zr)	2008/12/02	<0.10		ug	

RPD = Relative Percent Difference
SPIKE = Fortified sample

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

ATTACHMENT B

CALMET Input File

Jacques Whitford

```
CALMET.INP      2.1             Hour Start and End Times with Seconds
met data from 2002 to 2006 - lab. lim facility -NOV 18-08


---------------- Run title (3 lines)
----------------------------------------

                    CALMET MODEL CONTROL FILE
                    -------------------------

-------------------------------------------------------------------------
-------

INPUT GROUP: 0 -- Input and Output File Names


Subgroup (a)
------------
Default Name  Type          File Name
------------  ----          ---------
GEO.DAT       input    ! GEODAT=geo.dat       !
SURF.DAT      input    ! SRFDAT=surf.dat      !
CLOUD.DAT     input    * CLDDAT=              *
PRECIP.DAT    input    * PRCDAT=              *
WT.DAT        input    * WTDAT=               *

CALMET.LST    output   ! METLST=CMET.LST     !
CALMET.DAT    output   ! METDAT=CMET.DAT    !
PACOUT.DAT    output   * PACDAT=             *

All file names will be converted to lower case if LCFILES = T
Otherwise, if LCFILES = F, file names will be converted to UPPER CASE
         T = lower case      ! LCFILES = T !
         F = UPPER CASE

NUMBER OF UPPER AIR & OVERWATER STATIONS:

    Number of upper air stations (NUSTA)  No default     ! NUSTA =  1  !
    Number of overwater met stations
                                  (NOWSTA) No default     ! NOWSTA =  0
!

NUMBER OF PROGNOSTIC and IGF-CALMET FILEs:

    Number of MM4/MM5/3D.DAT files
                                  (NM3D) No default       ! NM3D =  0  !

    Number of IGF-CALMET.DAT files
                                  (NIGF)   No default     ! NIGF =  0  !

                       !END!
-------------------------------------------------------------------------
--------
Subgroup (b)
---------------------------------
Upper air files (one per station)
---------------------------------
Default Name  Type       File Name
------------  ----       ---------
UP1.DAT       input     1  ! UPDAT=up.dat!    !END!
```

```
------------------------------------------------------------------------
--------
Subgroup (c)
-----------------------------------------
Overwater station files (one per station)
-----------------------------------------
Default Name  Type       File Name
------------  ----       ---------
SEA1.DAT       input     1  * SEADAT=SEA_449.DAT *    *END*
------------------------------------------------------------------------
--------
Subgroup (d)
------------------------------------------------
MM4/MM5/3D.DAT files (consecutive or overlapping)
------------------------------------------------
Default Name  Type       File Name
------------  ----       ---------
MM51.DAT       input     1  * M3DDAT=LSP2003.DAT *    *END*
------------------------------------------------------------------------
--------
Subgroup (e)
------------------------------------------------
IGF-CALMET.DAT files (consecutive or overlapping)
------------------------------------------------
Default Name  Type       File Name
------------  ----       ---------
IGFn.DAT       input     1  * IGFDAT=CALMET0.DAT *    *END*
------------------------------------------------------------------------
--------
Subgroup (f)
----------------
Other file names
----------------

Default Name  Type       File Name
------------  ----       ---------
DIAG.DAT      input      * DIADAT=                  *
PROG.DAT      input      * PRGDAT=                  *

TEST.PRT      output     * TSTPRT=                  *
TEST.OUT      output     * TSTOUT=                  *
TEST.KIN      output     * TSTKIN=                  *
TEST.FRD      output     * TSTFRD=                  *
TEST.SLP      output     * TSTSLP=                  *
DCST.GRD      output     * DCSTGD=                  *

------------------------------------------------------------------------
--------
NOTES: (1) File/path names can be up to 70 characters in length
       (2) Subgroups (a) and (f) must have ONE 'END' (surrounded by
           delimiters) at the end of the group
       (3) Subgroups (b) through (e) are included ONLY if the
corresponding
           number of files (NUSTA, NOWSTA, NM3D, NIGF) is not 0, and
each must have
           an 'END' (surround by delimiters) at the end of EACH LINE

                        !END!
```

```
------------------------------------------------------------------------
-------

INPUT GROUP: 1 -- General run control parameters
--------------

     Starting date:    Year   (IBYR)  --    No default   ! IBYR  =  2002
!
                       Month  (IBMO)  --    No default   ! IBMO  =  1  !
                       Day    (IBDY)  --    No default   ! IBDY  =  1  !
     Starting time:    Hour   (IBHR)  --    No default   ! IBHR  =  0  !
                       Second (IBSEC) --    No default   ! IBSEC =  0  !

     Ending date:      Year   (IEYR)  --    No default   ! IEYR  =  2006
!
                       Month  (IEMO)  --    No default   ! IEMO  =  12
!
                       Day    (IEDY)  --    No default   ! IEDY  =  31
!
     Ending time:      Hour   (IEHR)  --    No default   ! IEHR  =  23
!
                       Second (IESEC) --    No default   ! IESEC =  0  !

      UTC time zone         (ABTZ) -- No default       ! ABTZ= UTC-0400
!
         (character*8)
         PST = UTC-0800, MST = UTC-0700 , GMT = UTC-0000
         CST = UTC-0600, EST = UTC-0500

     Length of modeling time-step (seconds)
     Must divide evenly into 3600 (1 hour)
     (NSECDT)                        Default:3600     ! NSECDT =  3600
!
                                     Units: seconds

     Run type            (IRTYPE) -- Default: 1       ! IRTYPE=  1  !

        0 = Computes wind fields only
        1 = Computes wind fields and micrometeorological variables
            (u*, w*, L, zi, etc.)
        (IRTYPE must be 1 to run CALPUFF or CALGRID)

     Compute special data fields required
     by CALGRID (i.e., 3-D fields of W wind
     components and temperature)
     in additional to regular            Default: T    ! LCALGRD = T !
     fields ? (LCALGRD)
     (LCALGRD must be T to run CALGRID)

      Flag to stop run after
      SETUP phase (ITEST)             Default: 2       ! ITEST=  2   !
      (Used to allow checking
      of the model inputs, files, etc.)
      ITEST = 1 - STOPS program after SETUP phase
      ITEST = 2 - Continues with execution of
                  COMPUTATIONAL phase after SETUP


     Test options specified to see if
     they conform to regulatory
```

```
     values? (MREG)                    No Default       ! MREG =   1   !

        0 = NO checks are made
        1 = Technical options must conform to USEPA guidance
                  IMIXH    -1       Maul-Carson convective mixing height
                                    over land; OCD mixing height
overwater
                  ICOARE   0        OCD deltaT method for overwater
fluxes
                  THRESHL  0.0      Threshold buoyancy flux over land
needed
                                    to sustain convective mixing height
growth
                  ISURFT   > 0      Pick one representative station, OR
                           -2       in NOOBS mode (ITPROG=2) average all
                                    surface prognostic temperatures to
get
                                    a single representative surface
temp.
                  IUPT     > 0      Pick one representative station, OR
                           -2       in NOOBS mode (ITPROG>0) average all
surface
                                    prognostic temperatures to get a
single
                                    representative surface temp.

!END!

----------------------------------------------------------------------
-------

INPUT GROUP: 2 -- Map Projection and Grid control parameters
--------------

     Projection for all (X,Y):
     -------------------------

     Map projection
     (PMAP)                    Default: UTM    ! PMAP = UTM  !

         UTM :  Universal Transverse Mercator
         TTM :  Tangential Transverse Mercator
         LCC :  Lambert Conformal Conic
          PS :  Polar Stereographic
          EM :  Equatorial Mercator
        LAZA :  Lambert Azimuthal Equal Area

     False Easting and Northing (km) at the projection origin
     (Used only if PMAP= TTM, LCC, or LAZA)
     (FEAST)                   Default=0.0     ! FEAST  = 0.000  !
     (FNORTH)                  Default=0.0     ! FNORTH = 0.000  !

     UTM zone (1 to 60)
     (Used only if PMAP=UTM)
     (IUTMZN)                  No Default      ! IUTMZN =  19   !

     Hemisphere for UTM projection?
     (Used only if PMAP=UTM)
     (UTMHEM)                  Default: N      ! UTMHEM = N  !
         N   :  Northern hemisphere projection
```

```
         S   :  Southern hemisphere projection

     Latitude and Longitude (decimal degrees) of projection origin
     (Used only if PMAP= TTM, LCC, PS, EM, or LAZA)
     (RLAT0)                    No Default      ! RLAT0 = 54N  !
     (RLON0)                    No Default      ! RLON0 = 67E  !

         TTM :  RLON0 identifies central (true N/S) meridian of
projection
                RLAT0 selected for convenience
         LCC :  RLON0 identifies central (true N/S) meridian of
projection
                RLAT0 selected for convenience
         PS  :  RLON0 identifies central (grid N/S) meridian of
projection
                RLAT0 selected for convenience
         EM  :  RLON0 identifies central meridian of projection
                RLAT0 is REPLACED by 0.0N (Equator)
         LAZA:  RLON0 identifies longitude of tangent-point of mapping
plane
                RLAT0 identifies latitude of tangent-point of mapping
plane

     Matching parallel(s) of latitude (decimal degrees) for projection
     (Used only if PMAP= LCC or PS)
     (XLAT1)                    No Default      ! XLAT1 = 0N  !
     (XLAT2)                    No Default      ! XLAT2 = 0N  !

         LCC :  Projection cone slices through Earth's surface at XLAT1
and XLAT2
         PS  :  Projection plane slices through Earth at XLAT1
                (XLAT2 is not used)

     ----------
     Note:  Latitudes and longitudes should be positive, and include a
            letter N,S,E, or W indicating north or south latitude, and
            east or west longitude.  For example,
            35.9  N Latitude  =  35.9N
            118.7 E Longitude = 118.7E


     Datum-region
     ------------

     The Datum-Region for the coordinates is identified by a character
     string.  Many mapping products currently available use the model of
the
     Earth known as the World Geodetic System 1984 (WGS-84).  Other
local
     models may be in use, and their selection in CALMET will make its
output
     consistent with local mapping products.  The list of Datum-Regions
with
     official transformation parameters is provided by the National
Imagery and
     Mapping Agency (NIMA).

     NIMA Datum - Regions(Examples)

-------------------------------------------------------------------------
```

```
------
     WGS-84    WGS-84 Reference Ellipsoid and Geoid, Global coverage
(WGS84)
     NAS-C     NORTH AMERICAN 1927 Clarke 1866 Spheroid, MEAN FOR CONUS
(NAD27)
     NAR-C     NORTH AMERICAN 1983 GRS 80 Spheroid, MEAN FOR CONUS
(NAD83)
     NWS-84    NWS 6370KM Radius, Sphere
     ESR-S     ESRI REFERENCE 6371KM Radius, Sphere

     Datum-region for output coordinates
     (DATUM)                    Default: WGS-84    ! DATUM = WGS-84  !


     Horizontal grid definition:
     ---------------------------

     Rectangular grid defined for projection PMAP,
     with X the Easting and Y the Northing coordinate

            No. X grid cells (NX)      No default     ! NX =   60  !
            No. Y grid cells (NY)      No default     ! NY =   60  !

     Grid spacing (DGRIDKM)            No default     ! DGRIDKM = 0.5 !
                                       Units: km

     Reference grid coordinate of
     SOUTHWEST corner of grid cell (1,1)

        X coordinate (XORIGKM)         No default     ! XORIGKM =
623.000 !
        Y coordinate (YORIGKM)         No default     ! YORIGKM =
6060.000 !
                                       Units: km


     Vertical grid definition:
     -------------------------

        No. of vertical layers (NZ)    No default     ! NZ =  8  !

        Cell face heights in arbitrary
        vertical grid (ZFACE(NZ+1))    No defaults
                                       Units: m
         ! ZFACE = 0.,20.,50.,100.,200.,500.,1000.,2000.,3300. !

!END!


------------------------------------------------------------------------
-------

INPUT GROUP: 3 -- Output Options
--------------


    DISK OUTPUT OPTION

       Save met. fields in an unformatted
       output file ?              (LSAVE)  Default: T     ! LSAVE = T !
```

```
   (F = Do not save, T = Save)

   Type of unformatted output file:
   (IFORMO)                          Default: 1    ! IFORMO =  1
!

        1 = CALPUFF/CALGRID type file (CALMET.DAT)
        2 = MESOPUFF-II type file     (PACOUT.DAT)


LINE PRINTER OUTPUT OPTIONS:

   Print met. fields ?  (LPRINT)       Default: F     ! LPRINT = F !
   (F = Do not print, T = Print)
   (NOTE: parameters below control which
          met. variables are printed)

   Print interval
   (IPRINF) in hours                   Default: 1     ! IPRINF =  1
!
   (Meteorological fields are printed
    every  1  hours)


   Specify which layers of U, V wind component
   to print (IUVOUT(NZ)) -- NOTE: NZ values must be entered
   (0=Do not print, 1=Print)
   (used only if LPRINT=T)        Defaults: NZ*0
   ! IUVOUT =  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0  !
   -----------------------


   Specify which levels of the W wind component to print
   (NOTE: W defined at TOP cell face --  10  values)
   (IWOUT(NZ)) -- NOTE: NZ values must be entered
   (0=Do not print, 1=Print)
   (used only if LPRINT=T & LCALGRD=T)
   -----------------------------------
                                       Defaults: NZ*0
    ! IWOUT =  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0  !


   Specify which levels of the 3-D temperature field to print
   (ITOUT(NZ)) -- NOTE: NZ values must be entered
   (0=Do not print, 1=Print)
   (used only if LPRINT=T & LCALGRD=T)
   -----------------------------------
                                       Defaults: NZ*0
    ! ITOUT =  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0 ,  0  !

   Specify which meteorological fields
   to print
   (used only if LPRINT=T)             Defaults: 0 (all variables)
   -----------------------


     Variable           Print ?
                     (0 = do not print,
                      1 = print)
     --------        ------------------
```

```
      !  STABILITY  =          0          ! - PGT stability class
      !  USTAR      =          0          ! - Friction velocity
      !  MONIN      =          0          ! - Monin-Obukhov length
      !  MIXHT      =          0          ! - Mixing height
      !  WSTAR      =          0          ! - Convective velocity
scale
      !  PRECIP     =          0          ! - Precipitation rate
      !  SENSHEAT   =          0          ! - Sensible heat flux
      !  CONVZI     =          0          ! - Convective mixing ht.


       Testing and debug print options for micrometeorological module

          Print input meteorological data and
          internal variables (LDB)         Default: F       ! LDB = F !
          (F = Do not print, T = print)
          (NOTE: this option produces large amounts of output)

          First time step for which debug data
          are printed (NN1)                Default: 1       ! NN1 =  1
!

          Last time step for which debug data
          are printed (NN2)                Default: 1       ! NN2 =  2
!

          Print distance to land
          internal variables (LDBCST)      Default: F       ! LDBCST = F
!
          (F = Do not print, T = print)
          (Output in .GRD file DCST.GRD, defined in input group 0)

       Testing and debug print options for wind field module
       (all of the following print options control output to
        wind field module's output files: TEST.PRT, TEST.OUT,
        TEST.KIN, TEST.FRD, and TEST.SLP)

          Control variable for writing the test/debug
          wind fields to disk files (IOUTD)
          (0=Do not write, 1=write)        Default: 0       ! IOUTD =  0
!

          Number of levels, starting at the surface,
          to print (NZPRN2)                Default: 1       ! NZPRN2 =
1  !

          Print the INTERPOLATED wind components ?
          (IPR0) (0=no, 1=yes)             Default: 0       !  IPR0 =  0
!

          Print the TERRAIN ADJUSTED surface wind
          components ?
          (IPR1) (0=no, 1=yes)             Default: 0       !  IPR1 =  0
!

          Print the SMOOTHED wind components and
          the INITIAL DIVERGENCE fields ?
          (IPR2) (0=no, 1=yes)             Default: 0       !  IPR2 =  0
!
```

```
          Print the FINAL wind speed and direction
          fields ?
          (IPR3) (0=no, 1=yes)             Default: 0       !  IPR3 =  0
!

          Print the FINAL DIVERGENCE fields ?
          (IPR4) (0=no, 1=yes)             Default: 0       !  IPR4 =  0
!

          Print the winds after KINEMATIC effects
          are added ?
          (IPR5) (0=no, 1=yes)             Default: 0       !  IPR5 =  0
!

          Print the winds after the FROUDE NUMBER
          adjustment is made ?
          (IPR6) (0=no, 1=yes)             Default: 0       !  IPR6 =  0
!

          Print the winds after SLOPE FLOWS
          are added ?
          (IPR7) (0=no, 1=yes)             Default: 0       !  IPR7 =  0
!

          Print the FINAL wind field components ?
          (IPR8) (0=no, 1=yes)             Default: 0       !  IPR8 =  0
!

!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 4 -- Meteorological data options
--------------

    NO OBSERVATION MODE             (NOOBS)  Default: 0     ! NOOBS =  0
!
          0 = Use surface, overwater, and upper air stations
          1 = Use surface and overwater stations (no upper air
observations)
              Use MM4/MM5/3D.DAT for upper air data
          2 = No surface, overwater, or upper air observations
              Use MM4/MM5/3D.DAT for surface, overwater, and upper air
data

    NUMBER OF SURFACE & PRECIP. METEOROLOGICAL STATIONS

       Number of surface stations   (NSSTA)  No default     ! NSSTA =  2
!

       Number of precipitation stations
       (NPSTA=-1: flag for use of MM5/3D.DAT precip data)
                                    (NPSTA)  No default     ! NPSTA =  0
!

    CLOUD DATA OPTIONS
       Gridded cloud fields:
```

```
                                   (ICLOUD)  Default: 0     ! ICLOUD =
0  !
       ICLOUD = 0 - Gridded clouds not used
       ICLOUD = 1 - Gridded CLOUD.DAT generated as OUTPUT
       ICLOUD = 2 - Gridded CLOUD.DAT read as INPUT
       ICLOUD = 3 - Gridded cloud cover from Prognostic Rel. Humidity
                    at 850mb (Teixera)
       ICLOUD = 4 - Gridded cloud cover from Prognostic Rel. Humidity
                    at all levels (MM5toGrads algorithm)

    FILE FORMATS

       Surface meteorological data file format
                                   (IFORMS)  Default: 2     ! IFORMS =
2  !
       (1 = unformatted (e.g., SMERGE output))
       (2 = formatted   (free-formatted user input))

       Precipitation data file format
                                   (IFORMP)  Default: 2     ! IFORMP =
2  !
       (1 = unformatted (e.g., PMERGE output))
       (2 = formatted   (free-formatted user input))

       Cloud data file format
                                   (IFORMC)  Default: 2     ! IFORMC =
2  !
       (1 = unformatted - CALMET unformatted output)
       (2 = formatted   - free-formatted CALMET output or user input)

!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 5 -- Wind Field Options and Parameters
--------------


    WIND FIELD MODEL OPTIONS
       Model selection variable (IWFCOD)     Default: 1      ! IWFCOD =
1  !
          0 = Objective analysis only
          1 = Diagnostic wind module

       Compute Froude number adjustment
       effects ? (IFRADJ)                    Default: 1      ! IFRADJ =
1  !
       (0 = NO, 1 = YES)

       Compute kinematic effects ? (IKINE)   Default: 0      ! IKINE  =
0  !
       (0 = NO, 1 = YES)

       Use O'Brien procedure for adjustment
       of the vertical velocity ? (IOBR)     Default: 0      ! IOBR =  0
!
       (0 = NO, 1 = YES)
```

```
       Compute slope flow effects ? (ISLOPE) Default: 1      ! ISLOPE  =
1  !
       (0 = NO, 1 = YES)

       Extrapolate surface wind observations
       to upper layers ? (IEXTRP)            Default: -4     ! IEXTRP =
-4  !
       (1 = no extrapolation is done,
        2 = power law extrapolation used,
        3 = user input multiplicative factors
            for layers 2 - NZ used (see FEXTRP array)
        4 = similarity theory used
        -1, -2, -3, -4 = same as above except layer 1 data
            at upper air stations are ignored

       Extrapolate surface winds even
       if calm? (ICALM)                      Default: 0      ! ICALM  =
0  !
       (0 = NO, 1 = YES)

       Layer-dependent biases modifying the weights of
       surface and upper air stations (BIAS(NZ))
         -1<=BIAS<=1
       Negative BIAS reduces the weight of upper air stations
         (e.g. BIAS=-0.1 reduces the weight of upper air stations
       by 10%; BIAS= -1, reduces their weight by 100 %)
       Positive BIAS reduces the weight of surface stations
         (e.g. BIAS= 0.2 reduces the weight of surface stations
       by 20%; BIAS=1 reduces their weight by 100%)
       Zero BIAS leaves weights unchanged (1/R**2 interpolation)
       Default: NZ*0
                                ! BIAS = -1 , -1 , -1 , -0.5 , -0.2 , 0.
, 0. , 0. !

       Minimum distance from nearest upper air station
       to surface station for which extrapolation
       of surface winds at surface station will be allowed
       (RMIN2: Set to -1 for IEXTRP = 4 or other situations
        where all surface stations should be extrapolated)
                                             Default: 4.     ! RMIN2 =
4.0 !

       Use gridded prognostic wind field model
       output fields as input to the diagnostic
       wind field model (IPROG)              Default: 0      ! IPROG =
0  !
       (0 = No, [IWFCOD = 0 or 1]
        1 = Yes, use CSUMM prog. winds as Step 1 field, [IWFCOD = 0]
        2 = Yes, use CSUMM prog. winds as initial guess field [IWFCOD =
1]
        3 = Yes, use winds from MM4.DAT file as Step 1 field [IWFCOD =
0]
        4 = Yes, use winds from MM4.DAT file as initial guess field
[IWFCOD = 1]
        5 = Yes, use winds from MM4.DAT file as observations [IWFCOD =
1]
        13 = Yes, use winds from MM5/3D.DAT file as Step 1 field [IWFCOD
= 0]
        14 = Yes, use winds from MM5/3D.DAT file as initial guess field
[IWFCOD = 1]
```

```
        15 = Yes, use winds from MM5/3D.DAT file as observations [IWFCOD
= 1]

       Timestep (seconds) of the prognostic
       model input data   (ISTEPPGS)         Default: 3600   ! ISTEPPGS
=  3600   !

       Use coarse CALMET fields as initial guess fields (IGFMET)
       (overwrites IGF based on prognostic wind fields if any)
                                            Default: 0      ! IGFMET =
0  !

    RADIUS OF INFLUENCE PARAMETERS

       Use varying radius of influence      Default: F      ! LVARY =
F!
       (if no stations are found within RMAX1,RMAX2,
        or RMAX3, then the closest station will be used)

       Maximum radius of influence over land
       in the surface layer (RMAX1)         No default      ! RMAX1 =
20. !
                                            Units: km
       Maximum radius of influence over land
       aloft (RMAX2)                        No default      ! RMAX2 =
20. !
                                            Units: km
       Maximum radius of influence over water
       (RMAX3)                              No default      ! RMAX3 =
20. !
                                            Units: km


    OTHER WIND FIELD INPUT PARAMETERS

       Minimum radius of influence used in
       the wind field interpolation (RMIN)  Default: 0.1    ! RMIN =
0.1 !
                                            Units: km
       Radius of influence of terrain
       features (TERRAD)                    No default      ! TERRAD =
5. !

                                            Units: km
       Relative weighting of the first
       guess field and observations in the
       SURFACE layer (R1)                   No default      ! R1 = 2. !
       (R1 is the distance from an          Units: km
       observational station at which the
       observation and first guess field are
       equally weighted)

       Relative weighting of the first
       guess field and observations in the
       layers ALOFT (R2)                    No default      ! R2 = 2. !
       (R2 is applied in the upper layers   Units: km
       in the same manner as R1 is used in
       the surface layer).

       Relative weighting parameter of the
```

```
       prognostic wind field data (RPROG)    No default      ! RPROG =
0. !
       (Used only if IPROG = 1)              Units: km
       ------------------------

       Maximum acceptable divergence in the
       divergence minimization procedure
       (DIVLIM)                              Default: 5.E-6  ! DIVLIM=
5.0E-06 !

       Maximum number of iterations in the
       divergence min. procedure (NITER)     Default: 50     ! NITER =
50  !

       Number of passes in the smoothing
       procedure (NSMTH(NZ))
       NOTE: NZ values must be entered
            Default: 2,(mxnz-1)*4 ! NSMTH =
 2 ,  4 ,  4 ,  4 ,  4 ,  4 ,  4 ,  4  !

       Maximum number of stations used in
       each layer for the interpolation of
       data to a grid point (NINTR2(NZ))
       NOTE: NZ values must be entered       Default: 99.    ! NINTR2 =
 4 ,  4 ,  4 ,  4 ,  4 ,  4 ,  4 ,  4  !

       Critical Froude number (CRITFN)       Default: 1.0    ! CRITFN =
1. !

       Empirical factor controlling the
       influence of kinematic effects
       (ALPHA)                               Default: 0.1    ! ALPHA =
0.1 !

       Multiplicative scaling factor for
       extrapolation of surface observations
       to upper layers (FEXTR2(NZ))          Default: NZ*0.0
       ! FEXTR2 = 0., 0., 0., 0., 0., 0., 0. !
       (Used only if IEXTRP = 3 or -3)


    BARRIER INFORMATION

       Number of barriers to interpolation
       of the wind fields (NBAR)             Default: 0      ! NBAR =  0
!

       Level (1 to NZ) up to which barriers
       apply (KBAR)                          Default: NZ     ! KBAR =  8
!

       THE FOLLOWING 4 VARIABLES ARE INCLUDED
       ONLY IF NBAR > 0
       NOTE: NBAR values must be entered     No defaults
             for each variable               Units: km

          X coordinate of BEGINNING
          of each barrier (XBBAR(NBAR))      ! XBBAR = 0. !
          Y coordinate of BEGINNING
          of each barrier (YBBAR(NBAR))      ! YBBAR = 0. !
```

```
          X coordinate of ENDING
          of each barrier (XEBAR(NBAR))      ! XEBAR = 0. !
          Y coordinate of ENDING
          of each barrier (YEBAR(NBAR))      ! YEBAR = 0. !


    DIAGNOSTIC MODULE DATA INPUT OPTIONS

       Surface temperature (IDIOPT1)         Default: 0      ! IDIOPT1 =
0  !
          0 = Compute internally from
              hourly surface observations or prognostic fields
          1 = Read preprocessed values from
              a data file (DIAG.DAT)

          Surface met. station to use for
          the surface temperature (ISURFT)   Default: -1    ! ISURFT = 1
!
          (Must be a value from 1 to NSSTA,
           or -1 to use 2-D spatially varying
              surface temperatures,
           or -2 to use a domain-average prognostic
              surface temperatures (only with ITPROG=2))
          (Used only if IDIOPT1 = 0)
          --------------------------

       Temperature lapse rate used in the    Default: 0     ! IDIOPT2 =
0  !
          computation of terrain-induced
          circulations (IDIOPT2)
          0 = Compute internally from (at least) twice-daily
              upper air observations or prognostic fields
          1 = Read hourly preprocessed values
              from a data file (DIAG.DAT)

          Upper air station to use for
          the domain-scale lapse rate (IUPT) Default: -1    ! IUPT   = 1
!
          (Must be a value from 1 to NUSTA,
           or -1 to use 2-D spatially varying lapse rate,
           or -2 to use a domain-average prognostic
              lapse rate (only with ITPROG>0))
          (Used only if IDIOPT2 = 0)
          --------------------------

          Depth through which the domain-scale
          lapse rate is computed (ZUPT)      Default: 200.  ! ZUPT =
200. !
          (Used only if IDIOPT2 = 0)         Units: meters
          --------------------------

       Initial Guess Field Winds
       (IDIOPT3)                             Default: 0     ! IDIOPT3 =
0  !
          0 = Compute internally from
              observations or prognostic wind fields
          1 = Read hourly preprocessed domain-average wind values
              from a data file (DIAG.DAT)
```

```
          Upper air station to use for
          the initial guess winds (IUPWND)   Default: -1    ! IUPWND = 1
!
          (Must be a value from -1 to NUSTA, with
          -1 indicating 3-D initial guess fields,
          and IUPWND>1 domain-scaled (i.e. constant) IGF)
          (Used only if IDIOPT3 = 0 and noobs=0)
          ------------------------------------

          Bottom and top of layer through
          which the domain-scale winds
          are computed
          (ZUPWND(1), ZUPWND(2))        Defaults: 1., 1000. ! ZUPWND=
1., 1000. !
          (Used only if IDIOPT3 = 0, NOOBS>0 and IUPWND>0)    Units:
meters
          -------------------------

       Observed surface wind components
       for wind field module (IDIOPT4)  Default: 0     ! IDIOPT4 =  0  !
          0 = Read WS, WD from a surface
              data file (SURF.DAT)
          1 = Read hourly preprocessed U, V from
              a data file (DIAG.DAT)

       Observed upper air wind components
       for wind field module (IDIOPT5)  Default: 0     ! IDIOPT5 =  0  !
          0 = Read WS, WD from an upper
              air data file (UP1.DAT, UP2.DAT, etc.)
          1 = Read hourly preprocessed U, V from
              a data file (DIAG.DAT)

       LAKE BREEZE INFORMATION

          Use Lake Breeze Module  (LLBREZE)
                                          Default: F      ! LLBREZE = F
!

           Number of lake breeze regions (NBOX)           ! NBOX =  0
!

        X Grid line 1 defining the region of interest
                                                         ! XG1 = 0. !
        X Grid line 2 defining the region of interest
                                                         ! XG2 = 0. !
        Y Grid line 1 defining the region of interest
                                                         ! YG1 = 0. !
        Y Grid line 2 defining the region of interest
                                                         ! YG2 = 0. !

         X Point defining the coastline (Straight line)
                   (XBCST)  (KM)   Default: none    ! XBCST = 0. !

         Y Point defining the coastline (Straight line)
                   (YBCST)  (KM)   Default: none    ! YBCST = 0. !

         X Point defining the coastline (Straight line)
                   (XECST)  (KM)   Default: none    ! XECST = 0. !

         Y Point defining the coastline (Straight line)
```

```
                    (YECST)  (KM)   Default: none    ! YECST = 0. !

       Number of stations in the region     Default: none ! NLB =  0 !
       (Surface stations + upper air stations)

       Station ID's  in the region   (METBXID(NLB))
       (Surface stations first, then upper air stations)
         ! METBXID =  0 !

!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 6 -- Mixing Height, Temperature and Precipitation
Parameters
--------------

    EMPIRICAL MIXING HEIGHT CONSTANTS

       Neutral, mechanical equation
       (CONSTB)                                Default: 1.41   ! CONSTB =
1.41 !
       Convective mixing ht. equation
       (CONSTE)                                Default: 0.15   ! CONSTE =
0.15 !
       Stable mixing ht. equation
       (CONSTN)                                Default: 2400.  ! CONSTN =
2400.!
       Overwater mixing ht. equation
       (CONSTW)                                Default: 0.16   ! CONSTW =
0.16 !
       Absolute value of Coriolis
       parameter (FCORIOL)                     Default: 1.E-4  ! FCORIOL =
1.0E-04!
                                               Units: (1/s)

    SPATIAL AVERAGING OF MIXING HEIGHTS

       Conduct spatial averaging
       (IAVEZI)  (0=no, 1=yes)                 Default: 1      ! IAVEZI =
1  !

       Max. search radius in averaging
       process (MNMDAV)                        Default: 1      ! MNMDAV =
1  !
                                               Units: Grid
                                                      cells
       Half-angle of upwind looking cone
       for averaging (HAFANG)                  Default: 30.    ! HAFANG =
30. !
                                               Units: deg.
       Layer of winds used in upwind
       averaging (ILEVZI)                      Default: 1      ! ILEVZI =
1  !
       (must be between 1 and NZ)
```

```
    CONVECTIVE MIXING HEIGHT OPTIONS:
       Method to compute the convective
       mixing height(IMIHXH)                Default: 1      ! IMIXH =
-1  !
           1: Maul-Carson for land and water cells
          -1: Maul-Carson for land cells only -
              OCD mixing height overwater
           2: Batchvarova and Gryning for land and water cells
          -2: Batchvarova and Gryning for land cells only
              OCD mixing height overwater

       Threshold buoyancy flux required to
       sustain convective mixing height growth
       overland (THRESHL)                   Default: 0.0    ! THRESHL =
0. !
       (expressed as a heat flux            units: W/m3
        per meter of boundary layer)


       Threshold buoyancy flux required to
       sustain convective mixing height growth
       overwater (THRESHW)                  Default: 0.05   ! THRESHW =
0.05 !
       (expressed as a heat flux            units: W/m3
        per meter of boundary layer)


       Option for overwater lapse rates used
       in convective mixing height growth
       (ITWPROG)                            Default: 0      ! ITWPROG =
0  !
       0 : use SEA.DAT lapse rates and deltaT (or assume neutral
           conditions if missing)
       1 : use prognostic lapse rates (only if IPROG>2)
           and SEA.DAT deltaT (or neutral if missing)
       2 : use prognostic lapse rates and prognostic delta T
           (only if iprog>12 and 3D.DAT version# 2.0 or higher)

       Land Use category ocean in 3D.DAT datasets
       (ILUOC3D)                            Default: 16     ! ILUOC3D =
16  !
       Note: if 3D.DAT from MM5 version 3.0, iluoc3d = 16
             if MM4.DAT,           typically iluoc3d = 7


    OTHER MIXING HEIGHT VARIABLES

       Minimum potential temperature lapse
       rate in the stable layer above the
       current convective mixing ht.        Default: 0.001  ! DPTMIN =
0.001 !
       (DPTMIN)                             Units: deg. K/m
       Depth of layer above current conv.
       mixing height through which lapse    Default: 200.   ! DZZI =
200. !
       rate is computed (DZZI)              Units: meters

       Minimum overland mixing height       Default:  50.   ! ZIMIN =
50. !
       (ZIMIN)                              Units: meters
```

```
       Maximum overland mixing height        Default: 3000.  ! ZIMAX =
3000. !
       (ZIMAX)                               Units: meters
       Minimum overwater mixing height       Default:   50.  ! ZIMINW =
50. !
       (ZIMINW) -- (Not used if observed     Units: meters
       overwater mixing hts. are used)
       Maximum overwater mixing height       Default: 3000.  ! ZIMAXW =
3000. !
       (ZIMAXW) -- (Not used if observed     Units: meters
       overwater mixing hts. are used)


    OVERWATER SURFACE FLUXES METHOD and PARAMETERS
          (ICOARE)                           Default: 10      ! ICOARE =
0   !
           0: original deltaT method (OCD)
          10: COARE with no wave parameterization (jwave=0, Charnock)
          11: COARE with wave option jwave=1 (Oost et al.)
              and default wave properties
         -11: COARE with wave option jwave=1 (Oost et al.)
              and observed wave properties (must be in SEA.DAT files)
          12: COARE with wave option 2 (Taylor and Yelland)
               and default wave properties
         -12: COARE with wave option 2 (Taylor and Yelland)
              and observed wave properties (must be in SEA.DAT files)

          Note:  When ICOARE=0, similarity wind profile stability PSI
functions
                 based on Van Ulden and Holtslag (1985) are substituted
for
                 later formulations used with the COARE module, and
temperatures
                 used for surface layer parameters are obtained from
either the
                 nearest surface station temperature or prognostic model
2D
                 temperatures (if ITPROG=2).


          Coastal/Shallow water length scale (DSHELF)
          (for modified z0 in shallow water)
          ( COARE fluxes only)
                                        Default : 0.        ! DSHELF =
0. !
                                        units: km

           COARE warm layer computation (IWARM)             ! IWARM =
0   !
           1: on - 0: off (must be off if SST measured with
           IR radiometer)               Default: 0

           COARE cool skin layer computation (ICOOL)        ! ICOOL =
0   !
           1: on - 0: off (must be off if SST measured with
           IR radiometer)               Default: 0

    RELATIVE HUMIDITY PARAMETERS

       3D relative humidity from observations or
```

```
       from prognostic data? (IRHPROG)       Default:0        ! IRHPROG
=  0   !

          0 = Use RH from SURF.DAT file
              (only if NOOBS = 0,1)
          1 = Use prognostic RH
              (only if NOOBS = 0,1,2)

    TEMPERATURE PARAMETERS

       3D temperature from observations or
       from prognostic data? (ITPROG)        Default:0        ! ITPROG =
0   !

          0 = Use Surface and upper air stations
              (only if NOOBS = 0)
          1 = Use Surface stations (no upper air observations)
              Use MM5/3D.DAT for upper air data
              (only if NOOBS = 0,1)
          2 = No surface or upper air observations
              Use MM5/3D.DAT for surface and upper air data
              (only if NOOBS = 0,1,2)

       Interpolation type
       (1 = 1/R ; 2 = 1/R**2)                Default:1         ! IRAD =
1  !

       Radius of influence for temperature
       interpolation (TRADKM)                Default: 500.     ! TRADKM
= 500. !
                                             Units: km

       Maximum Number of stations to include
       in temperature interpolation (NUMTS)  Default: 5        ! NUMTS =
5  !

       Conduct spatial averaging of temp-
       eratures (IAVET)  (0=no, 1=yes)       Default: 1        ! IAVET =
1  !
       (will use mixing ht MNMDAV,HAFANG
        so make sure they are correct)

       Default temperature gradient          Default: -.0098   ! TGDEFB
= -0.0098 !
       below the mixing height over          Units: K/m
       water (TGDEFB)

       Default temperature gradient          Default: -.0045   ! TGDEFA
= -0.0045 !
       above the mixing height over          Units: K/m
       water (TGDEFA)

       Beginning (JWAT1) and ending (JWAT2)
       land use categories for temperature                     ! JWAT1 =
55  !
       interpolation over water -- Make                        ! JWAT2 =
55  !
       bigger than largest land use to disable

   PRECIP INTERPOLATION PARAMETERS
```

```
       Method of interpolation (NFLAGP)      Default: 2       ! NFLAGP =
2  !
        (1=1/R,2=1/R**2,3=EXP/R**2)
       Radius of Influence  (SIGMAP)         Default: 100.0   ! SIGMAP =
50. !
        (0.0 => use half dist. btwn          Units: km
         nearest stns w & w/out
         precip when NFLAGP = 3)
       Minimum Precip. Rate Cutoff (CUTP)    Default: 0.01    ! CUTP =
0.01 !
        (values < CUTP = 0.0 mm/hr)          Units: mm/hr
!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 7 -- Surface meteorological station parameters
--------------

     SURFACE STATION VARIABLES
     (One record per station --  4  records in all)


             1     2
         Name   ID            X coord.   Y coord.   Time   Anem.
                               (km)       (km)      zone   Ht.(m)
       ------------------------------------------------------------
! SS1  ='SCH'       101         640.284     6074.848    4    10 !
! SS2  ='WEB'       102         643.38      5866.985    4    10  !
-------------------
      1
        Four character string for station name
        (MUST START IN COLUMN 9)

      2
        Six digit integer for station ID

!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 8 -- Upper air meteorological station parameters
--------------

     UPPER AIR STATION VARIABLES
     (One record per station --  1  records in all)

             1     2
         Name    ID      X coord.   Y coord.  Time zone
                           (km)       (km)
        ---------------------------------------------
! US1  ='WLAB'   15708    192.814    5956.791       5  !
-------------------
      1
        Four character string for station name
        (MUST START IN COLUMN 9)
```

```
      2
        Five digit integer for station ID

!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 9 -- Precipitation station parameters
--------------

     PRECIPITATION STATION VARIABLES
     (One record per station --  4  records in all)
     (NOT INCLUDED IF NPSTA = 0)

            1          2
         Name   Station    X coord.  Y coord.
                  Code       (km)      (km)
         ------------------------------------


-------------------
      1
        Four character string for station name
        (MUST START IN COLUMN 9)

      2
        Six digit station code composed of state
        code (first 2 digits) and station ID (last
        4 digits)

!END!
```

ATTACHMENT C

BPIP Input and Output Files

Jacques Whitford

P:\CMiC Jobs\1045xxx\1046156\Background\bpip\LIM1.bpv

BPIP (Dated: 04274)
DATE : 11/28/2008
TIME : 17:29:29
P:\CMiC Jobs\1045xxx\1046156\Background\bpip\LIM1.bpv

==========
BPIP PROCESSING INFORMATION:
==========

The P flag has been set for preparing downwash related data for a model run utilizing the PRIME algorithm.

Inputs entered in Meters will be converted to meters using a conversion factor of 1.0000. Output will be in meters.

UTMP is set to UTMN. The input is assumed to be in a local X-Y coordinate system as opposed to a UTM coordinate system. True North is in the positive Y direction.

Plant north is set to 0.00 degrees with respect to True North.

P:\CMiC Jobs\1045xxx\1046156\Background\bpip\LIM1.bpv

PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
(Output Units: meters)

Stack Name	Stack Height	Stack-Building Base Elevation Differences	GEP** EQN1	Preliminary* GEP Stack Height Value
STCK1	33.40	0.00	81.00	81.00
GEN1	5.00	0.00	81.00	81.00
GEN2	5.00	0.00	81.00	81.00
GEN3	5.00	0.00	81.00	81.00
GEN4	5.00	0.00	81.00	81.00
DC1	33.40	0.00	81.00	81.00

* Results are based on Determinants 1 & 2 on pages 1 & 2 of the GEP Technical Support Document. Determinant 3 may be investigated for additional stack height credit. Final values result after Determinant 3 has been taken into consideration.

** Results were derived from Equation 1 on page 6 of GEP Technical Support Document. Values have been adjusted for any stack-building base elevation differences.

Note: Criteria for determining stack heights for modeling emission limitations for a source can be found in Table 3.1 of the GEP Technical Support Document.

BPIP (Dated: 04274)

DATE : 11/28/2008
TIME : 17:29:29

P:\CMiC Jobs\1045xxx\1046156\Background\bpip\LIM1.bpv

BPIP output is in meters

```
     SO BUILDHGT STCK1      32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT STCK1      32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT STCK1      32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT STCK1      32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT STCK1      32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT STCK1      32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDWID STCK1      55.53   54.75   52.50   48.25   47.00
52.50
     SO BUILDWID STCK1      56.50   59.00   59.50   57.50   55.00
50.00
     SO BUILDWID STCK1      44.00   36.50   42.00   47.75   52.00
54.62
     SO BUILDWID STCK1      55.53   54.75   52.25   48.25   47.00
52.50
     SO BUILDWID STCK1      56.50   59.00   59.50   58.00   55.00
50.00
     SO BUILDWID STCK1      44.00   36.00   42.00   47.75   52.00
54.56
     SO BUILDLEN STCK1      58.00   55.00   50.00   44.00   36.00
42.00
     SO BUILDLEN STCK1      47.75   52.00   54.62   55.50   54.75
52.50
     SO BUILDLEN STCK1      48.50   47.00   52.50   56.50   58.50
59.50
     SO BUILDLEN STCK1      58.00   55.00   50.00   43.50   36.00
42.25
     SO BUILDLEN STCK1      47.75   52.00   54.56   55.53   54.88
52.50
     SO BUILDLEN STCK1      48.25   47.00   52.50   56.50   59.00
59.00
     SO XBADJ    STCK1     -14.00  -14.00  -14.00  -13.00  -11.50  -
17.25
     SO XBADJ    STCK1     -23.00  -28.00  -32.19  -35.41  -37.62  -
38.75
     SO XBADJ    STCK1     -38.25  -39.00  -42.50  -45.00  -46.00  -
46.00
     SO XBADJ    STCK1     -43.50  -40.50  -36.50  -30.50  -24.50  -
25.00
     SO XBADJ    STCK1     -24.75  -24.00  -22.38  -20.16  -17.38  -
14.25
     SO XBADJ    STCK1     -10.00   -8.00  -10.00  -11.00  -12.50  -
13.50
     SO YBADJ    STCK1       7.55   10.12   12.25   13.88   15.50
16.25
     SO YBADJ    STCK1      16.75   16.50   16.25   14.75   13.00
```

```
11.00
     SO YBADJ    STCK1       9.00    6.25    3.75    0.88   -2.00   -
4.88
     SO YBADJ    STCK1      -7.64  -10.12  -12.12  -14.12  -15.50  -
16.25
     SO YBADJ    STCK1     -17.25  -16.50  -15.75  -15.00  -13.50  -
11.50
     SO YBADJ    STCK1      -9.00   -6.50   -3.75   -0.88    2.00
4.91


     SO BUILDHGT GEN1       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN1       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN1       32.40    4.30    4.30   32.40   32.40
32.40
     SO BUILDHGT GEN1       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN1       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN1       32.40    4.30    4.30   32.40   32.40
32.40
     SO BUILDWID GEN1       55.53   54.75   52.50   48.25   47.00
52.50
     SO BUILDWID GEN1       56.50   59.00   59.50   57.50   55.00
50.00
     SO BUILDWID GEN1       44.00    8.50    8.75   47.75   52.00
54.62
     SO BUILDWID GEN1       55.53   54.75   52.25   48.25   47.00
52.50
     SO BUILDWID GEN1       56.50   59.00   59.50   58.00   55.00
50.00
     SO BUILDWID GEN1       44.00    8.50    9.25   47.75   52.00
54.56
     SO BUILDLEN GEN1       58.00   55.00   50.00   44.00   36.00
42.00
     SO BUILDLEN GEN1       47.75   52.00   54.62   55.50   54.75
52.50
     SO BUILDLEN GEN1       48.50    4.50    5.50   56.50   58.50
59.50
     SO BUILDLEN GEN1       58.00   55.00   50.00   43.50   36.00
42.25
     SO BUILDLEN GEN1       47.75   52.00   54.56   55.53   54.88
52.50
     SO BUILDLEN GEN1       48.25    4.50    6.00   56.50   59.00
59.00
     SO XBADJ    GEN1      -44.00  -49.00  -52.00  -53.50  -53.00  -
58.50
     SO XBADJ    GEN1      -62.75  -65.12  -65.50  -63.88  -60.38  -
55.00
     SO XBADJ    GEN1      -47.75   -8.50  -18.50  -33.00  -27.00  -
21.00
     SO XBADJ    GEN1      -13.00   -5.50    2.00   10.00   17.00
16.25
     SO XBADJ    GEN1       15.00   13.12   10.94    8.31    5.38
2.25
     SO XBADJ    GEN1       -0.75   -2.00   -3.00  -23.50  -31.50  -
38.50
     SO YBADJ    GEN1       36.02   32.88   28.75   23.38   17.50
```

```
11.25
     SO YBADJ    GEN1        4.25   -2.00   -8.75  -15.75  -21.50  -
27.00
     SO YBADJ    GEN1      -31.50   -2.75   -5.88  -38.88  -39.12  -
38.19
     SO YBADJ    GEN1      -36.11  -32.88  -28.38  -23.62  -17.50  -
11.25
     SO YBADJ    GEN1       -4.75    2.50    9.25   15.50   21.50
27.00
     SO YBADJ    GEN1       31.50    2.25    2.38   38.88   39.25
38.22


     SO BUILDHGT GEN2       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN2       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN2       32.40    4.30   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN2       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN2       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN2       32.40    4.30   32.40   32.40   32.40
32.40
     SO BUILDWID GEN2       55.53   54.75   52.50   48.25   47.00
52.50
     SO BUILDWID GEN2       56.50   59.00   59.50   57.50   55.00
50.00
     SO BUILDWID GEN2       44.00    8.50   42.00   47.75   52.00
54.62
     SO BUILDWID GEN2       55.53   54.75   52.25   48.25   47.00
52.50
     SO BUILDWID GEN2       56.50   59.00   59.50   58.00   55.00
50.00
     SO BUILDWID GEN2       44.00    8.50   42.00   47.75   52.00
54.56
     SO BUILDLEN GEN2       58.00   55.00   50.00   44.00   36.00
42.00
     SO BUILDLEN GEN2       47.75   52.00   54.62   55.50   54.75
52.50
     SO BUILDLEN GEN2       48.50    4.50   52.50   56.50   58.50
59.50
     SO BUILDLEN GEN2       58.00   55.00   50.00   43.50   36.00
42.25
     SO BUILDLEN GEN2       47.75   52.00   54.56   55.53   54.88
52.50
     SO BUILDLEN GEN2       48.25    4.50   52.50   56.50   59.00
59.00
     SO XBADJ    GEN2      -47.50  -51.50  -54.00  -54.00  -53.00  -
57.50
     SO XBADJ    GEN2      -60.75  -62.25  -61.88  -59.59  -55.62  -
49.75
     SO XBADJ    GEN2      -42.50   -3.00  -32.50  -28.00  -22.50  -
17.00
     SO XBADJ    GEN2      -10.00   -3.00    3.50   11.00   17.00
15.25
     SO XBADJ    GEN2       13.00   10.25    7.31    4.03    0.62   -
3.00
     SO XBADJ    GEN2       -6.00   -7.50  -20.50  -28.50  -36.00  -
```

```
42.50
     SO YBADJ    GEN2       31.77   28.12   23.50   18.12   12.00
6.25
     SO YBADJ    GEN2       -0.75   -7.00  -12.75  -18.75  -24.50  -
29.00
     SO YBADJ    GEN2      -32.00   -2.75  -36.25  -36.88  -36.25  -
34.56
     SO YBADJ    GEN2      -31.83  -28.12  -23.38  -18.38  -12.00   -
6.25
     SO YBADJ    GEN2        0.25    7.00   13.25   19.00   24.00
28.50
     SO YBADJ    GEN2       32.00    1.75   36.50   36.88   36.38
34.59


     SO BUILDHGT GEN3       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN3       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN3       32.40    4.30   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN3       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN3       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN3       32.40    4.30   32.40   32.40   32.40
32.40
     SO BUILDWID GEN3       55.53   54.75   52.50   48.25   47.00
52.50
     SO BUILDWID GEN3       56.50   59.00   59.50   57.50   55.00
50.00
     SO BUILDWID GEN3       44.00    8.50   42.00   47.75   52.00
54.62
     SO BUILDWID GEN3       55.53   54.75   52.25   48.25   47.00
52.50
     SO BUILDWID GEN3       56.50   59.00   59.50   58.00   55.00
50.00
     SO BUILDWID GEN3       44.00    8.00   42.00   47.75   52.00
54.56
     SO BUILDLEN GEN3       58.00   55.00   50.00   44.00   36.00
42.00
     SO BUILDLEN GEN3       47.75   52.00   54.62   55.50   54.75
52.50
     SO BUILDLEN GEN3       48.50    4.50   52.50   56.50   58.50
59.50
     SO BUILDLEN GEN3       58.00   55.00   50.00   43.50   36.00
42.25
     SO BUILDLEN GEN3       47.75   52.00   54.56   55.53   54.88
52.50
     SO BUILDLEN GEN3       48.25    4.50   52.50   56.50   59.00
59.00
     SO XBADJ    GEN3      -51.00  -54.00  -55.50  -54.50  -52.50  -
56.00
     SO XBADJ    GEN3      -58.50  -59.12  -57.94  -55.03  -50.50  -
44.50
     SO XBADJ    GEN3      -36.75    2.50  -27.00  -23.00  -18.00  -
13.00
     SO XBADJ    GEN3       -6.50   -1.00    5.00   11.50   16.50
13.75
     SO XBADJ    GEN3       10.75    7.00    3.38   -0.53   -4.38   -
```

```
8.25
     SO XBADJ    GEN3      -11.50    3.50  -26.00  -33.50  -40.50  -
46.50
     SO YBADJ    GEN3       27.17   23.12   18.00   12.62    6.50
0.75
     SO YBADJ    GEN3       -5.75  -11.50  -16.75  -22.25  -26.50  -
30.50
     SO YBADJ    GEN3      -32.50   -2.25  -35.00  -34.38  -33.12  -
30.62
     SO YBADJ    GEN3      -27.27  -23.00  -17.88  -12.62   -6.50   -
0.75
     SO YBADJ    GEN3        5.25   11.50   17.25   22.00   26.50
30.00
     SO YBADJ    GEN3       33.00    2.50   35.00   34.62   33.12
30.66


     SO BUILDHGT GEN4       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN4       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN4       32.40    4.30   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN4       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN4       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT GEN4       32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDWID GEN4       55.53   54.75   52.50   48.25   47.00
52.50
     SO BUILDWID GEN4       56.50   59.00   59.50   57.50   55.00
50.00
     SO BUILDWID GEN4       44.00    8.50   42.00   47.75   52.00
54.62
     SO BUILDWID GEN4       55.53   54.75   52.25   48.25   47.00
52.50
     SO BUILDWID GEN4       56.50   59.00   59.50   58.00   55.00
50.00
     SO BUILDWID GEN4       44.00   36.00   42.00   47.75   52.00
54.56
     SO BUILDLEN GEN4       58.00   55.00   50.00   44.00   36.00
42.00
     SO BUILDLEN GEN4       47.75   52.00   54.62   55.50   54.75
52.50
     SO BUILDLEN GEN4       48.50    4.50   52.50   56.50   58.50
59.50
     SO BUILDLEN GEN4       58.00   55.00   50.00   43.50   36.00
42.25
     SO BUILDLEN GEN4       47.75   52.00   54.56   55.53   54.88
52.50
     SO BUILDLEN GEN4       48.25   47.00   52.50   56.50   59.00
59.00
     SO XBADJ    GEN4      -53.50  -56.00  -57.00  -55.50  -52.50  -
55.00
     SO XBADJ    GEN4      -56.75  -56.62  -54.81  -51.34  -46.38  -
40.00
     SO XBADJ    GEN4      -32.25    7.50  -22.00  -18.50  -14.00   -
9.50
     SO XBADJ    GEN4       -3.50    1.50    6.50   12.00   16.50
```

```
12.75
     SO XBADJ    GEN4        9.00    4.62    0.25   -4.22   -8.50  -
12.75
     SO XBADJ    GEN4      -16.25  -21.50  -30.50  -37.50  -44.50  -
50.00
     SO YBADJ    GEN4       23.48   18.88   13.75    7.88    2.00   -
3.75
     SO YBADJ    GEN4      -10.25  -15.50  -20.25  -24.75  -29.00  -
31.50
     SO YBADJ    GEN4      -33.50   -2.25  -34.00  -32.62  -30.62  -
27.50
     SO YBADJ    GEN4      -23.58  -18.88  -13.38   -8.12   -2.00
3.75
     SO YBADJ    GEN4        9.75   15.50   20.75   25.00   28.50
31.50
     SO YBADJ    GEN4       33.50   34.00   34.00   32.88   30.62
27.53


     SO BUILDHGT DC1        32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT DC1        32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT DC1        32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT DC1        32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT DC1        32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDHGT DC1        32.40   32.40   32.40   32.40   32.40
32.40
     SO BUILDWID DC1        55.53   54.75   52.50   48.25   47.00
52.50
     SO BUILDWID DC1        56.50   59.00   59.50   57.50   55.00
50.00
     SO BUILDWID DC1        44.00   36.50   42.00   47.75   52.00
54.62
     SO BUILDWID DC1        55.53   54.75   52.25   48.25   47.00
52.50
     SO BUILDWID DC1        56.50   59.00   59.50   58.00   55.00
50.00
     SO BUILDWID DC1        44.00   36.00   42.00   47.75   52.00
54.56
     SO BUILDLEN DC1        58.00   55.00   50.00   44.00   36.00
42.00
     SO BUILDLEN DC1        47.75   52.00   54.62   55.50   54.75
52.50
     SO BUILDLEN DC1        48.50   47.00   52.50   56.50   58.50
59.50
     SO BUILDLEN DC1        58.00   55.00   50.00   43.50   36.00
42.25
     SO BUILDLEN DC1        47.75   52.00   54.56   55.53   54.88
52.50
     SO BUILDLEN DC1        48.25   47.00   52.50   56.50   59.00
59.00
     SO XBADJ    DC1       -27.50  -28.50  -29.00  -28.00  -26.50  -
31.50
     SO XBADJ    DC1       -36.00  -39.50  -41.75  -42.72  -42.50  -
41.00
     SO XBADJ    DC1       -38.00  -36.00  -37.00  -37.00  -36.00  -
```

```
34.00
     SO XBADJ    DC1       -30.00  -26.00  -21.00  -15.00   -9.50  -
10.75
     SO XBADJ    DC1       -11.75  -12.50  -12.81  -12.81  -12.50  -
11.75
     SO XBADJ    DC1       -10.50  -11.00  -15.50  -19.00  -22.50  -
25.50
     SO YBADJ    DC1        14.89   15.00   14.50   13.62   12.50
10.75
     SO YBADJ    DC1         8.75    6.50    4.25    1.25   -1.50   -
4.00
     SO YBADJ    DC1        -6.00   -8.75  -10.50  -12.12  -13.50  -
14.44
     SO YBADJ    DC1       -14.98  -15.00  -14.38  -13.88  -12.50  -
10.75
     SO YBADJ    DC1        -9.25   -6.50   -3.75   -1.50    1.00
3.50
     SO YBADJ    DC1         6.50    8.50   10.50   12.12   13.50
14.47
```

```
'P:\CMiC Jobs\1045xxx\1046156\Background\bpip\LIM1.bpv'
'P'
'Meters'  1.00000000
'UTMN'  0.0000
14
'BLDG1'  1         532.000  'Crushing building'
    4          32.400
           639250.070     6073005.700
           639275.910     6073030.180
           639304.650     6072995.500
           639278.450     6072970.900
'SP3'  1         532.000  'Lump ore stockpile'
    8          10.000
           639146.700     6073228.070
           639137.860     6073221.950
           639137.860     6073206.990
           639175.260     6073162.790
           639188.180     6073161.430
           639195.660     6073168.230
           639197.020     6073181.150
           639160.300     6073226.710
'SP4'  1         532.000  'Sinter fine ore stockpile'
    8          10.000
           639202.460     6073160.070
           639194.300     6073153.270
           639194.300     6073138.980
           639251.430     6073071.660
           639265.030     6073069.620
           639273.870     6073077.100
           639273.190     6073090.700
           639213.340     6073159.390
'TK1'  1         532.000  'Diesel storage tank'
    8          10.700
           639371.790     6073030.410
           639377.400     6073032.730
           639379.720     6073038.340
           639377.400     6073043.950
           639371.790     6073046.270
           639366.190     6073043.950
           639363.860     6073038.340
           639366.190     6073032.730
'T1'  1          532.000  'Transformers'
    4           2.100
           639307.190     6072996.180
           639312.420     6073001.050
           639320.110     6072992.780
           639314.640     6072987.620
'GENE1'  1         532.000  'Diesel generator 1'
    4           4.300
           639315.430     6073012.700
           639318.170     6073009.410
           639311.730     6073003.710
           639308.990     6073006.830
'GENE2'  1         532.000  'generator enclosure 2'
    4           4.300
           639305.030     6073010.970
           639311.290     6073017.160
           639314.160     6073013.720
           639307.850     6073007.980
'GENE3'  1         532.000  'generator enclosure 3'
```

```
    4           4.300
            639301.250     6073014.860
            639307.560     6073020.890
            639310.430     6073017.450
            639303.880     6073011.830
'GENE4'  1         532.000  'generator enclosure 4'
    4           4.300
            639297.890     6073019.270
            639300.890     6073015.940
            639306.930     6073021.190
            639304.090     6073024.490
'TK2'  1         532.000  'Process water tank'
    8          10.700
            639282.640     6072956.960
            639287.260     6072958.870
            639289.180     6072963.490
            639287.260     6072968.110
            639282.640     6072970.030
            639278.020     6072968.110
            639276.110     6072963.490
            639278.020     6072958.870
'PWP1'  1         532.000  'Process water pump'
    4           4.300
            639272.810     6072961.620
            639266.880     6072955.900
            639274.460     6072947.290
            639280.660     6072952.800
'SP1'  1         542.000  'Blue ore stockpile'
    8          10.000
            639291.030     6072768.250
            639317.870     6072728.000
            639331.290     6072727.100
            639341.120     6072736.050
            639336.650     6072782.560
            639317.870     6072799.550
            639305.340     6072799.550
            639295.510     6072793.290
'SP2'  1         542.000  'Red ore stockpile'
    8          10.000
            639389.430     6072775.400
            639393.900     6072729.780
            639407.320     6072719.050
            639423.420     6072725.310
            639435.940     6072771.830
            639424.310     6072793.290
            639411.790     6072796.870
            639397.480     6072792.400
'BLDG2'  1         532.000  'Mobile offices'
    4           3.200
            639354.830     6072953.920
            639372.030     6072969.840
            639378.400     6072962.830
            639361.200     6072945.640
6
'STCK1'         532.000         33.400      639282.240     6072984.480
'Boiler'
'GEN1'          532.000          5.000      639315.570     6073009.700
'Genset 1'
'GEN2'          532.000          5.000      639311.920     6073013.630
'Genset 2'
```

```
'GEN3'          532.000           5.000      639307.990     6073017.560
'Genset 3'
'GEN4'          532.000           5.000      639304.900     6073021.210
'Genset 4'
'DC1'           532.000          33.400      639291.830     6072996.410
'Dust collector'
```

ATTACHMENT D

Sample CALPUFF Input File

Jacques Whitford

Labrador Lim -Nov 26, 2008

---------- Run title (3 lines)

CALPUFF MODEL CONTROL FILE

INPUT GROUP: 0 -- Input and Output File Names

Default Name Type File Name
--- --- ---
CALMET.DAT input ! METDAT =CMET.DAT !
  or
ISCMET.DAT input * ISCDAT = *
  or
PLMMET.DAT input * PLMDAT = *
  or
PROFILE.DAT input * PRFDAT = *
SURFACE.DAT input * SFCDAT = *
RESTARTB.DAT input * RSTARTB= *

CALPUFF.LST output ! PUFLST =CPUFF.LST !
CONC.DAT output ! CONDAT =CPUFF.CON !
DFLX.DAT output * DFDAT = *
WFLX.DAT output * WFDAT = *

VISB.DAT output * VISDAT = *
TK2D.DAT output * T2DDAT = *
RHO2D.DAT output * RHODAT = *
RESTARTE.DAT output * RSTARTE= *

Emission Files

PTEMARB.DAT input * PTDAT = *
VOLEMARB.DAT input * VOLDAT = *
BAEMARB.DAT input * ARDAT = *
LNEMARB.DAT input * LNDAT = *

Other Files

OZONE.DAT input * OZDAT = *
VD.DAT input * VDDAT = *
CHEM.DAT input * CHEMDAT= *
H2O2.DAT input * H2O2DAT= *
HILL.DAT input * HILDAT= *
HILLRCT.DAT input * RCTDAT= *
COASTLN.DAT input * CSTDAT= *
FLUXBDY.DAT input * BDYDAT= *
BCON.DAT input * BCNDAT= *
DEBUG.DAT output * DEBUG = *
MASSFLX.DAT output * FLXDAT= *

```
MASSBAL.DAT   output   * BALDAT=             *
FOG.DAT       output   * FOGDAT=             *
RISE.DAT      output   * RISDAT=             *
------------------------------------------------------------------------
--------
All file names will be converted to lower case if LCFILES = T
Otherwise, if LCFILES = F, file names will be converted to UPPER CASE
         T = lower case      ! LCFILES = T !
         F = UPPER CASE
NOTE: (1) file/path names can be up to 70 characters in length


Provision for multiple input files
----------------------------------

     Number of CALMET.DAT files for run (NMETDAT)
                                     Default: 1       ! NMETDAT =   1
!

     Number of PTEMARB.DAT files for run (NPTDAT)
                                     Default: 0       ! NPTDAT =  0  !

     Number of BAEMARB.DAT files for run (NARDAT)
                                     Default: 0       ! NARDAT =  0  !

     Number of VOLEMARB.DAT files for run (NVOLDAT)
                                     Default: 0       ! NVOLDAT =  0  !

!END!

-------------
Subgroup (0a)
-------------

  The following CALMET.DAT filenames are processed in sequence if
NMETDAT>1

Default Name  Type          File Name
------------  ----          ---------
 none         input    * METDAT=     *   *END*


------------------------------------------------------------------------
--------

INPUT GROUP: 1 -- General run control parameters
--------------

    Option to run all periods found
    in the met. file     (METRUN)   Default: 0       ! METRUN =   0  !

         METRUN = 0 - Run period explicitly defined below
         METRUN = 1 - Run all periods in met. file

     Starting date:    Year   (IBYR)  --    No default   ! IBYR  =  2002
!
                       Month  (IBMO)  --    No default   ! IBMO  =  4  !
                       Day    (IBDY)  --    No default   ! IBDY  =  1  !
     Starting time:    Hour   (IBHR)  --    No default   ! IBHR  =  0  !
                       Minute (IBMIN) --    No default   ! IBMIN =  0  !
```

```
                    Second (IBSEC) --    No default   ! IBSEC =  0  !

     Ending date:   Year   (IEYR)  --    No default   ! IEYR  =  2002
!
                    Month  (IEMO)  --    No default   ! IEMO  =  10
!
                    Day    (IEDY)  --    No default   ! IEDY  =  31
!
     Ending time:   Hour   (IEHR)  --    No default   ! IEHR  =  0  !
                    Minute (IEMIN) --    No default   ! IEMIN =  0  !
                    Second (IESEC) --    No default   ! IESEC =  0  !

     (These are only used if METRUN = 0)

     Base time zone        (XBTZ) -- No default       ! XBTZ= 4.0  !
     The zone is the number of hours that must be
     ADDED to the time to obtain UTC (or GMT)
     Examples: PST = 8., MST = 7.
               CST = 6., EST = 5.

     Length of modeling time-step (seconds)
     Equal to update period in the primary
     meteorological data files, or an
     integer fraction of it (1/2, 1/3 ...)
     Must be no larger than 1 hour
     (NSECDT)                         Default:3600     ! NSECDT =  3600
!
                                      Units: seconds

     Number of chemical species (NSPEC)
                                      Default: 5       ! NSPEC =  4   !

     Number of chemical species
     to be emitted  (NSE)             Default: 3       ! NSE =  4   !

     Flag to stop run after
     SETUP phase (ITEST)              Default: 2       ! ITEST =  2   !
     (Used to allow checking
     of the model inputs, files, etc.)
           ITEST = 1 - STOPS program after SETUP phase
           ITEST = 2 - Continues with execution of program
                       after SETUP

     Restart Configuration:

        Control flag (MRESTART)       Default: 0       ! MRESTART =  0
!

           0 = Do not read or write a restart file
           1 = Read a restart file at the beginning of
               the run
           2 = Write a restart file during run
           3 = Read a restart file at beginning of run
               and write a restart file during run

        Number of periods in Restart
        output cycle (NRESPD)         Default: 0       ! NRESPD =  0   !

           0 = File written only at last period
          >0 = File updated every NRESPD periods
```

```
     Meteorological Data Format (METFM)
                                    Default: 1       ! METFM =  1   !

           METFM = 1 - CALMET binary file (CALMET.MET)
           METFM = 2 - ISC ASCII file (ISCMET.MET)
           METFM = 3 - AUSPLUME ASCII file (PLMMET.MET)
           METFM = 4 - CTDM plus tower file (PROFILE.DAT) and
                       surface parameters file (SURFACE.DAT)
           METFM = 5 - AERMET tower file (PROFILE.DAT) and
                       surface parameters file (SURFACE.DAT)

     Meteorological Profile Data Format (MPRFFM)
            (used only for METFM = 1, 2, 3)
                                    Default: 1       ! MPRFFM =  1   !

           MPRFFM = 1 - CTDM plus tower file (PROFILE.DAT)
           MPRFFM = 2 - AERMET tower file (PROFILE.DAT)

     PG sigma-y is adjusted by the factor (AVET/PGTIME)**0.2
     Averaging Time (minutes) (AVET)
                                    Default: 60.0    ! AVET = 60. !
     PG Averaging Time (minutes) (PGTIME)
                                    Default: 60.0    ! PGTIME = 60. !


!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 2 -- Technical options
--------------


     Vertical distribution used in the
     near field (MGAUSS)                  Default: 1     ! MGAUSS =  1
!
        0 = uniform
        1 = Gaussian

     Terrain adjustment method
     (MCTADJ)                             Default: 3     ! MCTADJ =  3
!
        0 = no adjustment
        1 = ISC-type of terrain adjustment
        2 = simple, CALPUFF-type of terrain
            adjustment
        3 = partial plume path adjustment

     Subgrid-scale complex terrain
     flag (MCTSG)                         Default: 0     ! MCTSG =  0
!
        0 = not modeled
        1 = modeled

     Near-field puffs modeled as
     elongated slugs? (MSLUG)             Default: 0     ! MSLUG =  0
!
```

```
         0 = no
         1 = yes (slug model used)

      Transitional plume rise modeled?
      (MTRANS)                              Default: 1     ! MTRANS =  1
!
         0 = no  (i.e., final rise only)
         1 = yes (i.e., transitional rise computed)

      Stack tip downwash? (MTIP)            Default: 1     ! MTIP =  1  !
         0 = no  (i.e., no stack tip downwash)
         1 = yes (i.e., use stack tip downwash)

      Method used to compute plume rise for
      point sources not subject to building
      downwash? (MRISE)                     Default: 1     ! MRISE =  1
!
         1 = Briggs plume rise
         2 = Numerical plume rise

      Method used to simulate building
      downwash? (MBDW)                      Default: 1     ! MBDW =   2
!
         1 = ISC method
         2 = PRIME method

      Vertical wind shear modeled above
      stack top? (MSHEAR)                   Default: 0     ! MSHEAR =  1
!
         0 = no  (i.e., vertical wind shear not modeled)
         1 = yes (i.e., vertical wind shear modeled)

      Puff splitting allowed? (MSPLIT)      Default: 0     ! MSPLIT =  1
!
         0 = no (i.e., puffs not split)
         1 = yes (i.e., puffs are split)

      Chemical mechanism flag (MCHEM)       Default: 1     ! MCHEM =  0
!
         0 = chemical transformation not
             modeled
         1 = transformation rates computed
             internally (MESOPUFF II scheme)
         2 = user-specified transformation
             rates used
         3 = transformation rates computed
             internally (RIVAD/ARM3 scheme)
         4 = secondary organic aerosol formation
             computed (MESOPUFF II scheme for OH)

      Aqueous phase transformation flag (MAQCHEM)
      (Used only if MCHEM = 1, or 3)        Default: 0     ! MAQCHEM =  0
!
         0 = aqueous phase transformation
             not modeled
         1 = transformation rates adjusted
             for aqueous phase reactions

      Wet removal modeled ? (MWET)          Default: 1     ! MWET =  0
!
```

```
         0 = no
         1 = yes

      Dry deposition modeled ? (MDRY)       Default: 1     ! MDRY =  0
!
         0 = no
         1 = yes
         (dry deposition method specified
          for each species in Input Group 3)


      Gravitational settling (plume tilt)
      modeled ? (MTILT)                     Default: 0     ! MTILT =  0
!
         0 = no
         1 = yes
         (puff center falls at the gravitational
          settling velocity for 1 particle species)

      Restrictions:
          - MDRY  = 1
          - NSPEC = 1  (must be particle species as well)
          - sg    = 0  GEOMETRIC STANDARD DEVIATION in Group 8 is
                       set to zero for a single particle diameter

      Method used to compute dispersion
      coefficients (MDISP)                  Default: 3     ! MDISP =  2
!

         1 = dispersion coefficients computed from measured values
             of turbulence, sigma v, sigma w
         2 = dispersion coefficients from internally calculated
             sigma v, sigma w using micrometeorological variables
             (u*, w*, L, etc.)
         3 = PG dispersion coefficients for RURAL areas (computed using
             the ISCST multi-segment approximation) and MP coefficients
in
             urban areas
         4 = same as 3 except PG coefficients computed using
             the MESOPUFF II eqns.
         5 = CTDM sigmas used for stable and neutral conditions.
             For unstable conditions, sigmas are computed as in
             MDISP = 3, described above.  MDISP = 5 assumes that
             measured values are read

      Sigma-v/sigma-theta, sigma-w measurements used? (MTURBVW)
      (Used only if MDISP = 1 or 5)         Default: 3     ! MTURBVW =  3
!
         1 = use sigma-v or sigma-theta measurements
             from PROFILE.DAT to compute sigma-y
             (valid for METFM = 1, 2, 3, 4, 5)
         2 = use sigma-w measurements
             from PROFILE.DAT to compute sigma-z
             (valid for METFM = 1, 2, 3, 4, 5)
         3 = use both sigma-(v/theta) and sigma-w
             from PROFILE.DAT to compute sigma-y and sigma-z
             (valid for METFM = 1, 2, 3, 4, 5)
         4 = use sigma-theta measurements
             from PLMMET.DAT to compute sigma-y
             (valid only if METFM = 3)
```

```
     Back-up method used to compute dispersion
     when measured turbulence data are
     missing (MDISP2)                     Default: 3     ! MDISP2 =  3
!
     (used only if MDISP = 1 or 5)
        2 = dispersion coefficients from internally calculated
            sigma v, sigma w using micrometeorological variables
            (u*, w*, L, etc.)
        3 = PG dispersion coefficients for RURAL areas (computed using
            the ISCST multi-segment approximation) and MP coefficients
in
            urban areas
        4 = same as 3 except PG coefficients computed using
            the MESOPUFF II eqns.

     [DIAGNOSTIC FEATURE]
     Method used for Lagrangian timescale for Sigma-y
     (used only if MDISP=1,2 or MDISP2=1,2)
     (MTAULY)                             Default: 0     ! MTAULY =  0
!
        0 = Draxler default 617.284 (s)
        1 = Computed as Lag. Length / (.75 q) -- after SCIPUFF
       10 < Direct user input (s)             -- e.g., 306.9


     [DIAGNOSTIC FEATURE]
     Method used for Advective-Decay timescale for Turbulence
     (used only if MDISP=2 or MDISP2=2)
     (MTAUADV)                            Default: 0     ! MTAUADV =  0
!
        0 = No turbulence advection
        1 = Computed (OPTION NOT IMPLEMENTED)
       10 < Direct user input (s)   -- e.g., 800


     Method used to compute turbulence sigma-v &
     sigma-w using micrometeorological variables
     (Used only if MDISP = 2 or MDISP2 = 2)
     (MCTURB)                             Default: 1     ! MCTURB =  1
!
        1 = Standard CALPUFF subroutines
        2 = AERMOD subroutines

     PG sigma-y,z adj. for roughness?     Default: 0     ! MROUGH =  0
!
     (MROUGH)
        0 = no
        1 = yes

     Partial plume penetration of         Default: 1     ! MPARTL =  1
!
     elevated inversion modeled for
     point sources?
     (MPARTL)
        0 = no
        1 = yes

     Partial plume penetration of         Default: 1     ! MPARTLBA =
1  !
```

```
     elevated inversion modeled for
     buoyant area sources?
     (MPARTLBA)
        0 = no
        1 = yes

     Strength of temperature inversion     Default: 0     ! MTINV =  0
!
     provided in PROFILE.DAT extended records?
     (MTINV)
        0 = no (computed from measured/default gradients)
        1 = yes

     PDF used for dispersion under convective conditions?
                                           Default: 0     ! MPDF =  1  !
     (MPDF)
        0 = no
        1 = yes

     Sub-Grid TIBL module used for shore line?
                                           Default: 0     ! MSGTIBL = 0
!
     (MSGTIBL)
        0 = no
        1 = yes

     Boundary conditions (concentration) modeled?
                                           Default: 0     ! MBCON = 0  !
     (MBCON)
        0 = no
        1 = yes, using formatted BCON.DAT file
        2 = yes, using unformatted CONC.DAT file

     Note:  MBCON > 0 requires that the last species modeled
            be 'BCON'.  Mass is placed in species BCON when
            generating boundary condition puffs so that clean
            air entering the modeling domain can be simulated
            in the same way as polluted air.  Specify zero
            emission of species BCON for all regular sources.

     Individual source contributions saved?
                                           Default: 0     ! MSOURCE = 0
!
     (MSOURCE)
        0 = no
        1 = yes


     Analyses of fogging and icing impacts due to emissions from
     arrays of mechanically-forced cooling towers can be performed
     using CALPUFF in conjunction with a cooling tower emissions
     processor (CTEMISS) and its associated postprocessors.  Hourly
     emissions of water vapor and temperature from each cooling tower
     cell are computed for the current cell configuration and ambient
     conditions by CTEMISS. CALPUFF models the dispersion of these
     emissions and provides cloud information in a specialized format
     for further analysis. Output to FOG.DAT is provided in either
     'plume mode' or 'receptor mode' format.

     Configure for FOG Model output?
```

```
                                          Default: 0     ! MFOG =  0
!
     (MFOG)
        0 = no
        1 = yes  - report results in PLUME Mode format
        2 = yes  - report results in RECEPTOR Mode format


     Test options specified to see if
     they conform to regulatory
     values? (MREG)                       Default: 1     ! MREG =  0
!

        0 = NO checks are made
        1 = Technical options must conform to USEPA
            Long Range Transport (LRT) guidance
                       METFM    1 or 2
                       AVET     60. (min)
                       PGTIME   60. (min)
                       MGAUSS   1
                       MCTADJ   3
                       MTRANS   1
                       MTIP     1
                       MRISE    1
                       MCHEM    1 or 3 (if modeling SOx, NOx)
                       MWET     1
                       MDRY     1
                       MDISP    2 or 3
                       MPDF     0 if MDISP=3
                                1 if MDISP=2
                       MROUGH   0
                       MPARTL   1
                       MPARTLBA 0
                       SYTDEP   550. (m)
                       MHFTSZ   0
                       SVMIN    0.5 (m/s)


!END!


-------------------------------------------------------------------------
-------

INPUT GROUP: 3a, 3b -- Species list
-------------------

------------
Subgroup (3a)
------------

  The following species are modeled:

! CSPEC =          SO2 !         !END!
! CSPEC =          NOX !         !END!
! CSPEC =          VOC !         !END!
! CSPEC =           CO !         !END!

                                                          Dry

OUTPUT GROUP
```

```
    SPECIES          MODELED          EMITTED       DEPOSITED
NUMBER
     NAME         (0=NO, 1=YES)    (0=NO, 1=YES)    (0=NO,
(0=NONE,
   (Limit: 12                                        1=COMPUTED-GAS
1=1st CGRUP,
    Characters                                       2=COMPUTED-PARTICLE
2=2nd CGRUP,
    in length)                                       3=USER-SPECIFIED)
3= etc.)

!          SO2  =         1,               1,           0,
0   !
!          NOX  =         1,               1,           0,
0   !
!          VOC  =         1,               1,           0,
0   !
!           CO  =         1,               1,           0,
0   !

!END!
```

Note: The last species in (3a) must be 'BCON' when using the boundary condition option (MBCON > 0). Species BCON should typically be modeled as inert (no chem transformation or removal).

Subgroup (3b)

The following names are used for Species-Groups in which results for certain species are combined (added) prior to output. The CGRUP name will be used as the species name in output files. Use this feature to model specific particle-size distributions by treating each size-range as a separate species. Order must be consistent with 3(a) above.

INPUT GROUP: 4 -- Map Projection and Grid control parameters

Projection for all (X,Y):

Map projection (PMAP) Default: UTM ! PMAP = UTM !

- UTM : Universal Transverse Mercator
- TTM : Tangential Transverse Mercator
- LCC : Lambert Conformal Conic
- PS : Polar Stereographic
- EM : Equatorial Mercator
- LAZA : Lambert Azimuthal Equal Area

```
     False Easting and Northing (km) at the projection origin
     (Used only if PMAP= TTM, LCC, or LAZA)
     (FEAST)                   Default=0.0     ! FEAST  = 0.000  !
     (FNORTH)                  Default=0.0     ! FNORTH = 0.000  !

     UTM zone (1 to 60)
     (Used only if PMAP=UTM)
     (IUTMZN)                  No Default      ! IUTMZN =  19   !

     Hemisphere for UTM projection?
     (Used only if PMAP=UTM)
     (UTMHEM)                  Default: N      ! UTMHEM = N  !
         N   :  Northern hemisphere projection
         S   :  Southern hemisphere projection

     Latitude and Longitude (decimal degrees) of projection origin
     (Used only if PMAP= TTM, LCC, PS, EM, or LAZA)
     (RLAT0)                   No Default      ! RLAT0 = 0N  !
     (RLON0)                   No Default      ! RLON0 = 0E  !

         TTM :  RLON0 identifies central (true N/S) meridian of
projection
                RLAT0 selected for convenience
         LCC :  RLON0 identifies central (true N/S) meridian of
projection
                RLAT0 selected for convenience
         PS  :  RLON0 identifies central (grid N/S) meridian of
projection
                RLAT0 selected for convenience
         EM  :  RLON0 identifies central meridian of projection
                RLAT0 is REPLACED by 0.0N (Equator)
         LAZA:  RLON0 identifies longitude of tangent-point of mapping
plane
                RLAT0 identifies latitude of tangent-point of mapping
plane

     Matching parallel(s) of latitude (decimal degrees) for projection
     (Used only if PMAP= LCC or PS)
     (XLAT1)                   No Default      ! XLAT1 = 0N  !
     (XLAT2)                   No Default      ! XLAT2 = 0N  !

         LCC :  Projection cone slices through Earth's surface at XLAT1
and XLAT2
         PS  :  Projection plane slices through Earth at XLAT1
                (XLAT2 is not used)

     ----------
     Note:  Latitudes and longitudes should be positive, and include a
            letter N,S,E, or W indicating north or south latitude, and
            east or west longitude.  For example,
            35.9  N Latitude  =  35.9N
            118.7 E Longitude = 118.7E


     Datum-region
     ------------

     The Datum-Region for the coordinates is identified by a character
     string.  Many mapping products currently available use the model of
the
```

Earth known as the World Geodetic System 1984 (WGS-84). Other local models may be in use, and their selection in CALMET will make its output consistent with local mapping products. The list of Datum-Regions with official transformation parameters is provided by the National Imagery and Mapping Agency (NIMA).

NIMA Datum - Regions(Examples)

WGS-84	WGS-84 Reference Ellipsoid and Geoid, Global coverage (WGS84)
NAS-C	NORTH AMERICAN 1927 Clarke 1866 Spheroid, MEAN FOR CONUS (NAD27)
NAR-C	NORTH AMERICAN 1983 GRS 80 Spheroid, MEAN FOR CONUS (NAD83)
NWS-84	NWS 6370KM Radius, Sphere
ESR-S	ESRI REFERENCE 6371KM Radius, Sphere

Datum-region for output coordinates
(DATUM) Default: WGS-84 ! DATUM = WGS-84 !

METEOROLOGICAL Grid:

Rectangular grid defined for projection PMAP,
with X the Easting and Y the Northing coordinate

No. X grid cells (NX)	No default	! NX = 60 !
No. Y grid cells (NY)	No default	! NY = 60 !
No. vertical layers (NZ)	No default	! NZ = 8 !
Grid spacing (DGRIDKM)	No default Units: km	! DGRIDKM = .5 !
Cell face heights (ZFACE(nz+1))	No defaults Units: m	

! ZFACE = .0, 20.0, 50.0, 100.0, 200.0, 500.0, 1000.0, 2000.0, 3300.0 !

Reference Coordinates of SOUTHWEST corner of grid cell(1, 1):		
X coordinate (XORIGKM)	No default	! XORIGKM = 623.0 !
Y coordinate (YORIGKM)	No default Units: km	! YORIGKM = 6060.0 !

COMPUTATIONAL Grid:

The computational grid is identical to or a subset of the MET. grid.

```
     The lower left (LL) corner of the computational grid is at grid
point
     (IBCOMP, JBCOMP) of the MET. grid.  The upper right (UR) corner of
the
     computational grid is at grid point (IECOMP, JECOMP) of the MET.
grid.
     The grid spacing of the computational grid is the same as the MET.
grid.

        X index of LL corner (IBCOMP)      No default     ! IBCOMP =  1
!
                  (1 <= IBCOMP <= NX)

        Y index of LL corner (JBCOMP)      No default     ! JBCOMP =  1
!
                  (1 <= JBCOMP <= NY)


        X index of UR corner (IECOMP)      No default     ! IECOMP =  60
!
                  (1 <= IECOMP <= NX)

        Y index of UR corner (JECOMP)      No default     ! JECOMP =  60
!
                  (1 <= JECOMP <= NY)



SAMPLING Grid (GRIDDED RECEPTORS):

     The lower left (LL) corner of the sampling grid is at grid point
     (IBSAMP, JBSAMP) of the MET. grid.  The upper right (UR) corner of
the
     sampling grid is at grid point (IESAMP, JESAMP) of the MET. grid.
     The sampling grid must be identical to or a subset of the
computational
     grid.  It may be a nested grid inside the computational grid.
     The grid spacing of the sampling grid is DGRIDKM/MESHDN.

        Logical flag indicating if gridded
        receptors are used (LSAMP)         Default: T     ! LSAMP = F !
        (T=yes, F=no)

        X index of LL corner (IBSAMP)      No default     ! IBSAMP =  0
!
         (IBCOMP <= IBSAMP <= IECOMP)

        Y index of LL corner (JBSAMP)      No default     ! JBSAMP =  0
!
         (JBCOMP <= JBSAMP <= JECOMP)


        X index of UR corner (IESAMP)      No default     ! IESAMP =  0
!
         (IBCOMP <= IESAMP <= IECOMP)

        Y index of UR corner (JESAMP)      No default     ! JESAMP =  0
!
         (JBCOMP <= JESAMP <= JECOMP)
```

```
       Nesting factor of the sampling
        grid (MESHDN)                      Default: 1     ! MESHDN =  1
!
        (MESHDN is an integer >= 1)

!END!


-------------------------------------------------------------------------
-------


INPUT GROUP: 5 -- Output Options
--------------
                                              *
*
     FILE                        DEFAULT VALUE             VALUE THIS RUN
     ----                        -------------             --------------

   Concentrations (ICON)              1                    !  ICON =  1
!
   Dry Fluxes (IDRY)                  1                    !  IDRY =  0
!
   Wet Fluxes (IWET)                  1                    !  IWET =  0
!
   2D Temperature (IT2D)              0                    !  IT2D =  0
!
   2D Density (IRHO)                  0                    !  IRHO =  0
!
   Relative Humidity (IVIS)           1                    !  IVIS =  0
!
    (relative humidity file is
     required for visibility
     analysis)
   Use data compression option in output file?
   (LCOMPRS)                           Default: T          ! LCOMPRS = T
!

   *
    0 = Do not create file, 1 = create file


    QA PLOT FILE OUTPUT OPTION:

       Create a standard series of output files (e.g.
       locations of sources, receptors, grids ...)
       suitable for plotting?
       (IQAPLOT)                       Default: 1         !  IQAPLOT =
1   !
         0 = no
         1 = yes

    DIAGNOSTIC MASS FLUX OUTPUT OPTIONS:

       Mass flux across specified boundaries
       for selected species reported?
       (IMFLX)                         Default: 0         ! IMFLX =  0
!
         0 = no
```

```
          1 = yes (FLUXBDY.DAT and MASSFLX.DAT filenames
                   are specified in Input Group 0)

       Mass balance for each species
       reported?
       (IMBAL)                         Default: 0         ! IMBAL =  0
!
          0 = no
          1 = yes (MASSBAL.DAT filename is
               specified in Input Group 0)


    NUMERICAL RISE OUTPUT OPTION:

       Create a file with plume properties for each rise
       increment, for each model timestep?
       This applies to sources modeled with numerical rise
       and is limited to ONE source in the run.
       (INRISE)                        Default: 0         ! INRISE =  0
!
          0 = no
          1 = yes (RISE.DAT filename is
                   specified in Input Group 0)


    LINE PRINTER OUTPUT OPTIONS:

       Print concentrations (ICPRT)    Default: 0         ! ICPRT =  0
!
       Print dry fluxes (IDPRT)        Default: 0         ! IDPRT =  0
!
       Print wet fluxes (IWPRT)        Default: 0         ! IWPRT =  0
!
       (0 = Do not print, 1 = Print)

       Concentration print interval
       (ICFRQ) in timesteps            Default: 1         ! ICFRQ =  1
!
       Dry flux print interval
       (IDFRQ) in timesteps            Default: 1         ! IDFRQ =  1
!
       Wet flux print interval
       (IWFRQ) in timesteps            Default: 1         ! IWFRQ =  1
!

       Units for Line Printer Output
       (IPRTU)                         Default: 1         ! IPRTU =  1
!
                        for             for
                    Concentration    Deposition
              1 =       g/m**3          g/m**2/s
              2 =      mg/m**3         mg/m**2/s
              3 =      ug/m**3         ug/m**2/s
              4 =      ng/m**3         ng/m**2/s
              5 =     Odour Units

       Messages tracking progress of run
       written to the screen ?
       (IMESG)                         Default: 2         ! IMESG =  2
!
```

```
         0 = no
         1 = yes (advection step, puff ID)
         2 = yes (YYYYJJJHH, # old puffs, # emitted puffs)


     SPECIES (or GROUP for combined species) LIST FOR OUTPUT OPTIONS

                  ---- CONCENTRATIONS ----   ------ DRY FLUXES ------
------ WET FLUXES ------   -- MASS FLUX --
   SPECIES
   /GROUP        PRINTED?  SAVED ON DISK?   PRINTED?  SAVED ON DISK?
PRINTED?  SAVED ON DISK?   SAVED ON DISK?
   -------       ------------------------   ------------------------
------------------------   ---------------
!          SO2 =     0,           1,           0,           0,
0,           0,           0   !
!          NOX =     0,           1,           0,           0,
0,           0,           0   !
!          VOC =     0,           1,           0,           0,
0,           0,           0   !
!           CO =     0,           1,           0,           0,
0,           0,           0   !

  Note:  Species BCON (for MBCON > 0) does not need to be saved on disk.


     OPTIONS FOR PRINTING "DEBUG" QUANTITIES (much output)

       Logical for debug output
       (LDEBUG)                                  Default: F     ! LDEBUG
= F !

       First puff to track
       (IPFDEB)                                  Default: 1     ! IPFDEB
=  1  !

       Number of puffs to track
       (NPFDEB)                                  Default: 1     ! NPFDEB
=  1  !

       Met. period to start output
       (NN1)                                     Default: 1     ! NN1 =
1   !

       Met. period to end output
       (NN2)                                     Default: 10    ! NN2 =
10  !

!END!


-------------------------------------------------------------------------
-------


INPUT GROUP: 6a, 6b, & 6c -- Subgrid scale complex terrain inputs
-------------------------

---------------
Subgroup (6a)
```

```
---------------
       Number of terrain features (NHILL)       Default: 0     ! NHILL =
0   !

       Number of special complex terrain
       receptors  (NCTREC)                      Default: 0     ! NCTREC
=  0   !

       Terrain and CTSG Receptor data for
       CTSG hills input in CTDM format ?
       (MHILL)                                  No Default     ! MHILL =
2   !
       1 = Hill and Receptor data created
           by CTDM processors & read from
           HILL.DAT and HILLRCT.DAT files
       2 = Hill data created by OPTHILL &
           input below in Subgroup (6b);
           Receptor data in Subgroup (6c)

       Factor to convert horizontal dimensions  Default: 1.0   ! XHILL2M
= 1.0 !
       to meters (MHILL=1)

       Factor to convert vertical dimensions    Default: 1.0   ! ZHILL2M
= 1.0 !
       to meters (MHILL=1)

       X-origin of CTDM system relative to      No Default     ! XCTDMKM
= 0 !
       CALPUFF coordinate system, in Kilometers (MHILL=1)

       Y-origin of CTDM system relative to      No Default     ! YCTDMKM
= 0 !
       CALPUFF coordinate system, in Kilometers (MHILL=1)

! END !

---------------
Subgroup (6b)
---------------

                      1 **
     HILL information


HILL           XC         YC        THETAH  ZGRID  RELIEF    EXPO 1
EXPO 2   SCALE 1    SCALE 2    AMAX1     AMAX2
 NO.          (km)       (km)       (deg.)   (m)     (m)       (m)
(m)       (m)        (m)        (m)       (m)
----          ----       ----       ------  -----  ------    ------
------   -------    -------    -----     -----

---------------
Subgroup (6c)
---------------

    COMPLEX TERRAIN RECEPTOR INFORMATION

                     XRCT         YRCT        ZRCT          XHH
                     (km)         (km)         (m)
```

```
                  ------        -----      ------         ----


-------------------
1
     Description of Complex Terrain Variables:
          XC, YC  = Coordinates of center of hill
          THETAH  = Orientation of major axis of hill (clockwise from
                    North)
          ZGRID   = Height of the  0  of the grid above mean sea
                    level
          RELIEF  = Height of the crest of the hill above the grid
elevation
          EXPO 1  = Hill-shape exponent for the major axis
          EXPO 2  = Hill-shape exponent for the major axis
          SCALE 1 = Horizontal length scale along the major axis
          SCALE 2 = Horizontal length scale along the minor axis
          AMAX    = Maximum allowed axis length for the major axis
          BMAX    = Maximum allowed axis length for the major axis

          XRCT, YRCT = Coordinates of the complex terrain receptors
          ZRCT    = Height of the ground (MSL) at the complex terrain
                    Receptor
          XHH     = Hill number associated with each complex terrain
receptor
                    (NOTE: MUST BE ENTERED AS A REAL NUMBER)

   **
     NOTE: DATA for each hill and CTSG receptor are treated as a
separate
           input subgroup and therefore must end with an input group
terminator.

-------------------------------------------------------------------------
-------


INPUT GROUP: 7 -- Chemical parameters for dry deposition of gases
--------------

      SPECIES     DIFFUSIVITY      ALPHA STAR      REACTIVITY
MESOPHYLL RESISTANCE     HENRY'S LAW COEFFICIENT
       NAME        (cm**2/s)
(s/cm)               (dimensionless)
      -------     -----------      ----------      ----------
--------------------     ----------------------


!END!


-------------------------------------------------------------------------
-------


INPUT GROUP: 8 -- Size parameters for dry deposition of particles
--------------

     For SINGLE SPECIES, the mean and standard deviation are used to
     compute a deposition velocity for NINT (see group 9) size-ranges,
```

```
     and these are then averaged to obtain a mean deposition velocity.

     For GROUPED SPECIES, the size distribution should be explicitly
     specified (by the 'species' in the group), and the standard
deviation
     for each should be entered as 0.  The model will then use the
     deposition velocity for the stated mean diameter.

      SPECIES      GEOMETRIC MASS MEAN        GEOMETRIC STANDARD
       NAME             DIAMETER                 DEVIATION
                        (microns)                (microns)
      -------      -------------------        ------------------

!END!


-------------------------------------------------------------------------
-------


INPUT GROUP: 9 -- Miscellaneous dry deposition parameters
--------------

     Reference cuticle resistance (s/cm)
     (RCUTR)                          Default: 30    !  RCUTR = 30.0 !
     Reference ground resistance  (s/cm)
     (RGR)                            Default: 10    !    RGR = 10.0 !
     Reference pollutant reactivity
     (REACTR)                         Default: 8     ! REACTR = 8.0 !

     Number of particle-size intervals used to
     evaluate effective particle deposition velocity
     (NINT)                           Default: 9     !   NINT =  9  !

     Vegetation state in unirrigated areas
     (IVEG)                           Default: 1     !   IVEG =  1   !
        IVEG=1 for active and unstressed vegetation
        IVEG=2 for active and stressed vegetation
        IVEG=3 for inactive vegetation

!END!


-------------------------------------------------------------------------
-------


INPUT GROUP: 10 -- Wet Deposition Parameters
---------------


                     Scavenging Coefficient -- Units: (sec)**(-1)

       Pollutant      Liquid Precip.       Frozen Precip.
       ---------      --------------       --------------

!END!


-------------------------------------------------------------------------
```

```
-------


INPUT GROUP: 11 -- Chemistry Parameters
---------------

     Ozone data input option (MOZ)     Default: 1            ! MOZ =  0
!
     (Used only if MCHEM = 1, 3, or 4)
        0 = use a monthly background ozone value
        1 = read hourly ozone concentrations from
            the OZONE.DAT data file

     Monthly ozone concentrations
     (Used only if MCHEM = 1, 3, or 4 and
      MOZ = 0 or MOZ = 1 and all hourly O3 data missing)
     (BCKO3) in ppb                    Default: 12*80.
     !  BCKO3 = 80.00, 80.00, 80.00, 80.00, 80.00, 80.00, 80.00, 80.00,
80.00, 80.00, 80.00, 80.00 !

     Monthly ammonia concentrations
     (Used only if MCHEM = 1, or 3)
     (BCKNH3) in ppb                   Default: 12*10.
     !  BCKNH3 = 10.00, 10.00, 10.00, 10.00, 10.00, 10.00, 10.00, 10.00,
10.00, 10.00, 10.00, 10.00 !

     Nighttime SO2 loss rate (RNITE1)
     in percent/hour                   Default: 0.2          ! RNITE1 =
.2 !

     Nighttime NOx loss rate (RNITE2)
     in percent/hour                   Default: 2.0          ! RNITE2 =
2.0 !

     Nighttime HNO3 formation rate (RNITE3)
     in percent/hour                   Default: 2.0          ! RNITE3 =
2.0 !

     H2O2 data input option (MH2O2)    Default: 1            ! MH2O2 =
1   !
     (Used only if MAQCHEM = 1)
        0 = use a monthly background H2O2 value
        1 = read hourly H2O2 concentrations from
            the H2O2.DAT data file

     Monthly H2O2 concentrations
     (Used only if MQACHEM = 1 and
      MH2O2 = 0 or MH2O2 = 1 and all hourly H2O2 data missing)
     (BCKH2O2) in ppb                  Default: 12*1.
     !  BCKH2O2 = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00,
1.00, 1.00, 1.00 !


 --- Data for SECONDARY ORGANIC AEROSOL (SOA) Option
     (used only if MCHEM = 4)

     The SOA module uses monthly values of:
          Fine particulate concentration in ug/m^3 (BCKPMF)
          Organic fraction of fine particulate     (OFRAC)
          VOC / NOX ratio (after reaction)         (VCNX)
```

to characterize the air mass when computing
the formation of SOA from VOC emissions.
Typical values for several distinct air mass types are:

Month	1	2	3	4	5	6	7	8	9	10	11	12
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Clean Continental												
BCKPMF	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
OFRAC	.15	.15	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
VCNX	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.
Clean Marine (surface)												
BCKPMF	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
OFRAC	.25	.25	.30	.30	.30	.30	.30	.30	.30	.30	.30	.25
VCNX	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.
Urban - low biogenic (controls present)												
BCKPMF	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
OFRAC	.20	.20	.25	.25	.25	.25	.25	.25	.20	.20	.20	.20
VCNX	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
Urban - high biogenic (controls present)												
BCKPMF	60.	60.	60.	60.	60.	60.	60.	60.	60.	60.	60.	60.
OFRAC	.25	.25	.30	.30	.30	.55	.55	.55	.35	.35	.35	.25
VCNX	15.	15.	15.	15.	15.	15.	15.	15.	15.	15.	15.	15.
Regional Plume												
BCKPMF	20.	20.	20.	20.	20.	20.	20.	20.	20.	20.	20.	20.
OFRAC	.20	.20	.25	.35	.25	.40	.40	.40	.30	.30	.30	.20
VCNX	15.	15.	15.	15.	15.	15.	15.	15.	15.	15.	15.	15.
Urban - no controls present												
BCKPMF	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.
OFRAC	.30	.30	.35	.35	.35	.55	.55	.55	.35	.35	.35	.30
VCNX	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.

Default: Clean Continental
! BCKPMF = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00 !

```
     !  OFRAC  = 0.15, 0.15, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20,
0.20, 0.20, 0.15 !
     !  VCNX   = 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00,
50.00, 50.00, 50.00, 50.00 !


!END!


------------------------------------------------------------------------
-------


INPUT GROUP: 12 -- Misc. Dispersion and Computational Parameters
---------------

     Horizontal size of puff (m) beyond which
     time-dependent dispersion equations (Heffter)
     are used to determine sigma-y and
     sigma-z (SYTDEP)                          Default: 550.   ! SYTDEP
= 5.5E02 !

     Switch for using Heffter equation for sigma z
     as above (0 = Not use Heffter; 1 = use Heffter
     (MHFTSZ)                                  Default: 0      ! MHFTSZ
=  0   !

     Stability class used to determine plume
     growth rates for puffs above the boundary
     layer (JSUP)                              Default: 5      ! JSUP =
5   !

     Vertical dispersion constant for stable
     conditions (k1 in Eqn. 2.7-3)  (CONK1)    Default: 0.01   ! CONK1
= .01 !

     Vertical dispersion constant for neutral/
     unstable conditions (k2 in Eqn. 2.7-4)
     (CONK2)                                   Default: 0.1    ! CONK2
= .1 !

     Factor for determining Transition-point from
     Schulman-Scire to Huber-Snyder Building Downwash
     scheme (SS used for Hs < Hb + TBD * HL)
     (TBD)                                     Default: 0.5    ! TBD =
.5 !
        TBD < 0   ==> always use Huber-Snyder
        TBD = 1.5 ==> always use Schulman-Scire
        TBD = 0.5 ==> ISC Transition-point

     Range of land use categories for which
     urban dispersion is assumed
     (IURB1, IURB2)                            Default: 10     ! IURB1
=  10  !
                                                       19     ! IURB2
=  19  !

     Site characterization parameters for single-point Met data files
---------
     (needed for METFM = 2,3,4,5)
```

```
        Land use category for modeling domain
        (ILANDUIN)                              Default: 20     !
ILANDUIN =  20  !

        Roughness length (m) for modeling domain
        (Z0IN)                                  Default: 0.25   ! Z0IN =
.25 !

        Leaf area index for modeling domain
        (XLAIIN)                                Default: 3.0    ! XLAIIN
= 3.0 !

        Elevation above sea level (m)
        (ELEVIN)                                Default: 0.0    ! ELEVIN
= .0 !

        Latitude (degrees) for met location
        (XLATIN)                                Default: -999.  ! XLATIN
= -999.0 !

        Longitude (degrees) for met location
        (XLONIN)                                Default: -999.  ! XLONIN
= -999.0 !

     Specialized information for interpreting single-point Met data
files -----

        Anemometer height (m) (Used only if METFM = 2,3)
        (ANEMHT)                                Default: 10.    ! ANEMHT
= 10.0 !

        Form of lateral turbulance data in PROFILE.DAT file
        (Used only if METFM = 4,5 or MTURBVW = 1 or 3)
        (ISIGMAV)                               Default: 1      !
ISIGMAV =  1  !
            0 = read sigma-theta
            1 = read sigma-v

        Choice of mixing heights (Used only if METFM = 4)
        (IMIXCTDM)                              Default: 0      !
IMIXCTDM =  0  !
            0 = read PREDICTED mixing heights
            1 = read OBSERVED mixing heights

     Maximum length of a slug (met. grid units)
     (XMXLEN)                                   Default: 1.0    ! XMXLEN
= 1.0 !

     Maximum travel distance of a puff/slug (in
     grid units) during one sampling step
     (XSAMLEN)                                  Default: 1.0    !
XSAMLEN = 1.0 !

     Maximum Number of slugs/puffs release from
     one source during one time step
     (MXNEW)                                    Default: 99     ! MXNEW
=  99   !

     Maximum Number of sampling steps for
```

```
     one puff/slug during one time step
     (MXSAM)                                    Default: 99     ! MXSAM
=  99   !

     Number of iterations used when computing
     the transport wind for a sampling step
     that includes gradual rise (for CALMET
     and PROFILE winds)
     (NCOUNT)                                   Default: 2      ! NCOUNT
=  2   !

     Minimum sigma y for a new puff/slug (m)
     (SYMIN)                                    Default: 1.0    ! SYMIN
= 1.0  !

     Minimum sigma z for a new puff/slug (m)
     (SZMIN)                                    Default: 1.0    ! SZMIN
= 1.0  !

     Maximum sigma z (m) allowed to avoid
     numerical problem in calculating virtual
     time or distance.  Cap should be large
     enough to have no influence on normal events.
     Enter a negative cap to disable.
     (SZCAP_M)                                  Default: 5.0e06 !
SZCAP_M = 5.0E06 !

     Default minimum turbulence velocities sigma-v and sigma-w
     for each stability class over land and over water (m/s)
     (SVMIN(12) and SWMIN(12))

                     ----------  LAND  ----------       ---------  WATER
----------
        Stab Class :  A    B    C    D    E    F         A    B    C
D    E    F
                     ---  ---  ---  ---  ---  ---       ---  ---  ---
---  ---  ---
     Default SVMIN : .50, .50, .50, .50, .50, .50,      .37, .37, .37,
.37, .37, .37
     Default SWMIN : .20, .12, .08, .06, .03, .016,     .20, .12, .08,
.06, .03, .016

          ! SVMIN = 0.500, 0.500, 0.500, 0.500, 0.500, 0.500, 0.370,
0.370, 0.370, 0.370, 0.370, 0.370!
          ! SWMIN = 0.200, 0.120, 0.080, 0.060, 0.030, 0.016, 0.200,
0.120, 0.080, 0.060, 0.030, 0.016!

     Divergence criterion for dw/dz across puff
     used to initiate adjustment for horizontal
     convergence (1/s)
     Partial adjustment starts at CDIV(1), and
     full adjustment is reached at CDIV(2)
     (CDIV(2))                                  Default: 0.0,0.0  ! CDIV
= .0, .0 !

     Search radius (number of cells) for nearest
     land and water cells used in the subgrid
     TIBL module
     (NLUTIBL)                                  Default: 4      !
NLUTIBL =  4  !
```

```
     Minimum wind speed (m/s) allowed for
     non-calm conditions. Also used as minimum
     speed returned when using power-law
     extrapolation toward surface
     (WSCALM)                                  Default: 0.5    ! WSCALM
= .5 !

     Maximum mixing height (m)
     (XMAXZI)                                  Default: 3000.  ! XMAXZI
= 3000.0 !

     Minimum mixing height (m)
     (XMINZI)                                  Default: 50.    ! XMINZI
= 50.0 !

     Default wind speed classes --
     5 upper bounds (m/s) are entered;
     the 6th class has no upper limit
     (WSCAT(5))                      Default   :
                                     ISC RURAL : 1.54, 3.09, 5.14, 8.23,
10.8 (10.8+)

                               Wind Speed Class :  1     2     3     4
5
                                                   ---   ---   ---   ---
---
                                       ! WSCAT = 1.54, 3.09, 5.14, 8.23,
10.80 !

     Default wind speed profile power-law
     exponents for stabilities 1-6
     (PLX0(6))                       Default   : ISC RURAL values
                                     ISC RURAL : .07, .07, .10, .15,
.35, .55
                                     ISC URBAN : .15, .15, .20, .25,
.30, .30

                                Stability Class :  A     B     C     D
E     F
                                                   ---   ---   ---   ---
---   ---
                                          ! PLX0 = 0.07, 0.07, 0.10, 0.15,
0.35, 0.55 !

     Default potential temperature gradient
     for stable classes E, F (degK/m)
     (PTG0(2))                       Default: 0.020, 0.035
                                        ! PTG0 = 0.020,   0.035 !

     Default plume path coefficients for
     each stability class (used when option
     for partial plume height terrain adjustment
     is selected -- MCTADJ=3)
     (PPC(6))                   Stability Class :  A     B     C     D
E     F
                                   Default  PPC : .50,  .50,  .50,  .50,
.35,  .35
                                                   ---   ---   ---   ---
---   ---
```

```
                                        !  PPC = 0.50, 0.50, 0.50, 0.50,
0.35, 0.35 !

     Slug-to-puff transition criterion factor
     equal to sigma-y/length of slug
     (SL2PF)                            Default: 10.        ! SL2PF =
10.0 !

     Puff-splitting control variables -----------------------

       VERTICAL SPLIT
       --------------

       Number of puffs that result every time a puff
       is split - nsplit=2 means that 1 puff splits
       into 2
       (NSPLIT)                         Default:   3        ! NSPLIT
=  3  !

       Time(s) of a day when split puffs are eligible to
       be split once again; this is typically set once
       per day, around sunset before nocturnal shear develops.
       24 values: 0 is midnight (00:00) and 23 is 11 PM (23:00)
       0=do not re-split    1=eligible for re-split
       (IRESPLIT(24))                   Default:  Hour 17 = 1
       !  IRESPLIT = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0 !

       Split is allowed only if last hour's mixing
       height (m) exceeds a minimum value
       (ZISPLIT)                        Default: 100.       ! ZISPLIT
= 100.0 !

       Split is allowed only if ratio of last hour's
       mixing ht to the maximum mixing ht experienced
       by the puff is less than a maximum value (this
       postpones a split until a nocturnal layer develops)
       (ROLDMAX)                        Default: 0.25       ! ROLDMAX
= 0.25 !


       HORIZONTAL SPLIT
       ----------------

       Number of puffs that result every time a puff
       is split - nsplith=5 means that 1 puff splits
       into 5
       (NSPLITH)                        Default:   5        ! NSPLITH
=  5  !

       Minimum sigma-y (Grid Cells Units) of puff
       before it may be split
       (SYSPLITH)                       Default:  1.0       !
SYSPLITH = 1.0 !

       Minimum puff elongation rate (SYSPLITH/hr) due to
       wind shear, before it may be split
       (SHSPLITH)                       Default:  2.        !
SHSPLITH = 2.0 !

       Minimum concentration (g/m^3) of each
```

```
       species in puff before it may be split
       Enter array of NSPEC values; if a single value is
       entered, it will be used for ALL species
       (CNSPLITH)                          Default:  1.0E-07   !
CNSPLITH = 1.0E-07 !

     Integration control variables -----------------------

       Fractional convergence criterion for numerical SLUG
       sampling integration
       (EPSSLUG)                           Default:   1.0e-04  ! EPSSLUG
= 1.0E-04 !

       Fractional convergence criterion for numerical AREA
       source integration
       (EPSAREA)                           Default:   1.0e-06  ! EPSAREA
= 1.0E-06 !

       Trajectory step-length (m) used for numerical rise
       integration
       (DSRISE)                            Default:   1.0      ! DSRISE
= 1.0 !

       Boundary Condition (BC) Puff control variables
------------------------

       Minimum height (m) to which BC puffs are mixed as they are
emitted
       (MBCON=2 ONLY).  Actual height is reset to the current mixing
height
       at the release point if greater than this minimum.
       (HTMINBC)                           Default:   500.     ! HTMINBC
= 500.0 !

       Search radius (km) about a receptor for sampling nearest BC puff.
       BC puffs are typically emitted with a spacing of one grid cell
       length, so the search radius should be greater than DGRIDKM.
       (RSAMPBC)                           Default:   10.      ! RSAMPBC
= 10.0 !

       Near-Surface depletion adjustment to concentration profile used
when
       sampling BC puffs?
       (MDEPBC)                            Default:   1        ! MDEPBC
=  1  !
          0 = Concentration is NOT adjusted for depletion
          1 = Adjust Concentration for depletion

!END!


----------------------------------------------------------------------
-------


INPUT GROUPS: 13a, 13b, 13c, 13d -- Point source parameters
--------------------------------

---------------
Subgroup (13a)
```

```
---------------

     Number of point sources with
     parameters provided below      (NPT1)  No default  !  NPT1 =  5  !

     Units used for point source
     emissions below                (IPTU)  Default: 1  !  IPTU =   1  !
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
     provided below in (13d)        (NSPT1) Default: 0  !  NSPT1 =  0  !

     Number of point sources with
     variable emission parameters
     provided in external file      (NPT2)  No default  !  NPT2 =  0  !

     (If NPT2 > 0, these point
     source emissions are read from
     the file: PTEMARB.DAT)

!END!

---------------
Subgroup (13b)
---------------
                                      a
          POINT SOURCE: CONSTANT DATA
          ----------------------------

b          c
  Source       X         Y       Stack    Base     Stack    Exit  Exit
Bldg.  Emission
   No.     Coordinate Coordinate Height Elevation Diameter  Vel.  Temp.
Dwash   Rates
              (km)      (km)       (m)      (m)       (m)  (m/s) (deg.
K)
  ------   ---------- ---------- ------  ------   -------- -----
-------- ----- --------
   1 ! SRCNAM = STCK1 !
   1 ! X =  639.282, 6072.984,    33.4,532.25,        .9,  25.0,  500.0,
1.0,1.7E-01, 2.1E-01,  0.0E00,
      1.1E-01 !
   1 ! ZPLTFM  =       .0 !
   1 ! FMFAC  =      1.0 !   !END!
   2 ! SRCNAM = GEN1 !
   2 ! X =639.31557,6073.0097,    5.0,532.25,        .2,  25.0,  500.0,
1.0,4.1E-01,  1.6E00, 8.9E-02,
      7.0E-01 !
   2 ! ZPLTFM  =       .0 !
   2 ! FMFAC  =      1.0 !   !END!
   3 ! SRCNAM = GEN2 !
   3 ! X =639.31192,6073.01363,    5.0,532.25,        .2,  25.0,  500.0,
```

```
1.0,4.1E-01,  1.6E00, 8.9E-02,
      7.0E-01 !
   3 ! ZPLTFM  =       .0 !
   3 ! FMFAC  =      1.0 !   !END!
   4 ! SRCNAM = GEN3 !
   4 ! X =639.30799,6073.01756,    5.0,532.25,        .2,  25.0,  500.0,
1.0,4.1E-01,  1.6E00, 8.9E-02,
      7.0E-01 !
   4 ! ZPLTFM  =       .0 !
   4 ! FMFAC  =      1.0 !   !END!
   5 ! SRCNAM = DC1 !
   5 ! X =639.29183,6072.99641,    33.4,532.25,        .5,  10.0,
.0,  1.0, 0.0E00,  0.0E00,  0.0E00,
       0.0E00 !
   5 ! ZPLTFM  =       .0 !
   5 ! FMFAC  =      1.0 !   !END!

--------
```

a

Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

SRCNAM is a 12-character name for a source
(No default)

X is an array holding the source data listed by the column headings
(No default)

SIGYZI is an array holding the initial sigma-y and sigma-z (m)
(Default: 0.,0.)

FMFAC is a vertical momentum flux factor (0. or 1.0) used to represent the effect of rain-caps or other physical configurations that reduce momentum rise associated with the actual exit velocity.
(Default: 1.0 -- full momentum used)

ZPLTFM is the platform height (m) for sources influenced by an isolated structure that has a significant open area between the surface and the bulk of the structure, such as an offshore oil platform. The Base Elevation is that of the surface (ground or ocean), and the Stack Height is the release height above the Base (not above the platform). Building heights entered in Subgroup 13c must be those of the buildings on the platform, measured from the platform deck. ZPLTFM is used only with MBDW=1 (ISC downwash method) for sources with building downwash.
(Default: 0.0)

b

0. = No building downwash modeled
1. = Downwash modeled for buildings resting on the surface
2. = Downwash modeled for buildings raised above the surface (ZPLTFM > 0.)

NOTE: must be entered as a REAL number (i.e., with decimal point)

c
An emission rate must be entered for every pollutant modeled.
Enter emission rate of zero for secondary pollutants that are
modeled, but not emitted. Units are specified by IPTU
(e.g. 1 for g/s).

Subgroup (13c)

BUILDING DIMENSION DATA FOR SOURCES SUBJECT TO DOWNWASH

Source
a
No. Effective building height, width, length and X/Y offset (in meters)
every 10 degrees. LENGTH, XBADJ, and YBADJ are only needed for
MBDW=2 (PRIME downwash option)

```
 1    ! SRCNAM  =   STCK1 !
 1    ! HEIGHT  =  32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4!
 1    ! WIDTH   =   55.53,   54.75,   52.5,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   57.5,   55.0,   50.0,
                   44.0,   36.5,   42.0,   47.75,   52.0,   54.62,
                   55.53,   54.75,   52.25,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   58.0,   55.0,   50.0,
                   44.0,   36.0,   42.0,   47.75,   52.0,   54.56!
 1    ! LENGTH =   58.0,   55.0,   50.0,   44.0,   36.0,   42.0,
                   47.75,   52.0,   54.62,   55.5,   54.75,   52.5,
                   48.5,   47.0,   52.5,   56.5,   58.5,   59.5,
                   58.0,   55.0,   50.0,   43.5,   36.0,   42.25,
                   47.75,   52.0,   54.56,   55.53,   54.88,   52.5,
                   48.25,   47.0,   52.5,   56.5,   59.0,   59.0!
 1    ! XBADJ   =   -14.0,   -14.0,   -14.0,   -13.0,   -11.5,   -17.25,
                   -23.0,   -28.0,   -32.19,   -35.41,   -37.62,   -
38.75,
                   -38.25,   -39.0,   -42.5,   -45.0,   -46.0,   -46.0,
                   -43.5,   -40.5,   -36.5,   -30.5,   -24.5,   -25.0,
                   -24.75,   -24.0,   -22.38,   -20.16,   -17.38,   -
14.25,
                   -10.0,   -8.0,   -10.0,   -11.0,   -12.5,   -13.5!
 1    ! YBADJ   =   7.55,   10.12,   12.25,   13.88,   15.5,   16.25,
                   16.75,   16.5,   16.25,   14.75,   13.0,   11.0,
                   9.0,   6.25,   3.75,   .88,   -2.0,   -4.88,
                   -7.64,   -10.12,   -12.12,   -14.12,   -15.5,   -
16.25,
                   -17.25,   -16.5,   -15.75,   -15.0,   -13.5,   -11.5,
                   -9.0,   -6.5,   -3.75,   -.88,   2.0,   4.91!
!END!
 2    ! SRCNAM  =   GEN1 !
```

```
 2    ! HEIGHT  =  32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   4.3,   4.3,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   4.3,   4.3,   32.4,   32.4,   32.4!
 2    ! WIDTH   =   55.53,   54.75,   52.5,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   57.5,   55.0,   50.0,
                   44.0,   8.5,   8.75,   47.75,   52.0,   54.62,
                   55.53,   54.75,   52.25,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   58.0,   55.0,   50.0,
                   44.0,   8.5,   9.25,   47.75,   52.0,   54.56!
 2    ! LENGTH =   58.0,   55.0,   50.0,   44.0,   36.0,   42.0,
                   47.75,   52.0,   54.62,   55.5,   54.75,   52.5,
                   48.5,   4.5,   5.5,   56.5,   58.5,   59.5,
                   58.0,   55.0,   50.0,   43.5,   36.0,   42.25,
                   47.75,   52.0,   54.56,   55.53,   54.88,   52.5,
                   48.25,   4.5,   6.0,   56.5,   59.0,   59.0!
 2    ! XBADJ   =   -44.0,   -49.0,   -52.0,   -53.5,   -53.0,   -58.5,
                   -62.75,   -65.12,   -65.5,   -63.88,   -60.38,   -
55.0,
                   -47.75,   -8.5,   -18.5,   -33.0,   -27.0,   -21.0,
                   -13.0,   -5.5,   2.0,   10.0,   17.0,   16.25,
                   15.0,   13.12,   10.94,   8.31,   5.38,   2.25,
                   -.75,   -2.0,   -3.0,   -23.5,   -31.5,   -38.5!
 2    ! YBADJ   =   36.02,   32.88,   28.75,   23.38,   17.5,   11.25,
                   4.25,   -2.0,   -8.75,   -15.75,   -21.5,   -27.0,
                   -31.5,   -2.75,   -5.88,   -38.88,   -39.12,   -
38.19,
                   -36.11,   -32.88,   -28.38,   -23.62,   -17.5,   -
11.25,
                   -4.75,   2.5,   9.25,   15.5,   21.5,   27.0,
                   31.5,   2.25,   2.38,   38.88,   39.25,   38.22!
!END!
 3    ! SRCNAM  =   GEN2 !
 3    ! HEIGHT  =  32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   4.3,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   4.3,   32.4,   32.4,   32.4,   32.4!
 3    ! WIDTH   =   55.53,   54.75,   52.5,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   57.5,   55.0,   50.0,
                   44.0,   8.5,   42.0,   47.75,   52.0,   54.62,
                   55.53,   54.75,   52.25,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   58.0,   55.0,   50.0,
                   44.0,   8.5,   42.0,   47.75,   52.0,   54.56!
 3    ! LENGTH =   58.0,   55.0,   50.0,   44.0,   36.0,   42.0,
                   47.75,   52.0,   54.62,   55.5,   54.75,   52.5,
                   48.5,   4.5,   52.5,   56.5,   58.5,   59.5,
                   58.0,   55.0,   50.0,   43.5,   36.0,   42.25,
                   47.75,   52.0,   54.56,   55.53,   54.88,   52.5,
                   48.25,   4.5,   52.5,   56.5,   59.0,   59.0!
 3    ! XBADJ   =   -47.5,   -51.5,   -54.0,   -54.0,   -53.0,   -57.5,
                   -60.75,   -62.25,   -61.88,   -59.59,   -55.62,   -
49.75,
                   -42.5,   -3.0,   -32.5,   -28.0,   -22.5,   -17.0,
                   -10.0,   -3.0,   3.5,   11.0,   17.0,   15.25,
                   13.0,   10.25,   7.31,   4.03,   .62,   -3.0,
                   -6.0,   -7.5,   -20.5,   -28.5,   -36.0,   -42.5!
```

```
 3    ! YBADJ  =   31.77,   28.12,   23.5,   18.12,   12.0,   6.25,
                   -.75,   -7.0,   -12.75,   -18.75,   -24.5,   -29.0,
                   -32.0,   -2.75,   -36.25,   -36.88,   -36.25,   -
34.56,
                   -31.83,   -28.12,   -23.38,   -18.38,   -12.0,   -
6.25,
                   .25,   7.0,   13.25,   19.0,   24.0,   28.5,
                   32.0,   1.75,   36.5,   36.88,   36.38,   34.59!
!END!
 4    ! SRCNAM  =   GEN3 !
 4    ! HEIGHT  =  32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   4.3,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   4.3,   32.4,   32.4,   32.4,   32.4!
 4    ! WIDTH  =   55.53,   54.75,   52.5,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   57.5,   55.0,   50.0,
                   44.0,   8.5,   42.0,   47.75,   52.0,   54.62,
                   55.53,   54.75,   52.25,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   58.0,   55.0,   50.0,
                   44.0,   8.0,   42.0,   47.75,   52.0,   54.56!
 4    ! LENGTH =   58.0,   55.0,   50.0,   44.0,   36.0,   42.0,
                   47.75,   52.0,   54.62,   55.5,   54.75,   52.5,
                   48.5,   4.5,   52.5,   56.5,   58.5,   59.5,
                   58.0,   55.0,   50.0,   43.5,   36.0,   42.25,
                   47.75,   52.0,   54.56,   55.53,   54.88,   52.5,
                   48.25,   4.5,   52.5,   56.5,   59.0,   59.0!
 4    ! XBADJ  =   -51.0,   -54.0,   -55.5,   -54.5,   -52.5,   -56.0,
                   -58.5,   -59.12,   -57.94,   -55.03,   -50.5,   -
44.5,
                   -36.75,   2.5,   -27.0,   -23.0,   -18.0,   -13.0,
                   -6.5,   -1.0,   5.0,   11.5,   16.5,   13.75,
                   10.75,   7.0,   3.38,   -.53,   -4.38,   -8.25,
                   -11.5,   3.5,   -26.0,   -33.5,   -40.5,   -46.5!
 4    ! YBADJ  =   27.17,   23.12,   18.0,   12.62,   6.5,   .75,
                   -5.75,   -11.5,   -16.75,   -22.25,   -26.5,   -30.5,
                   -32.5,   -2.25,   -35.0,   -34.38,   -33.12,   -
30.62,
                   -27.27,   -23.0,   -17.88,   -12.62,   -6.5,   -.75,
                   5.25,   11.5,   17.25,   22.0,   26.5,   30.0,
                   33.0,   2.5,   35.0,   34.62,   33.12,   30.66!
!END!
 5    ! SRCNAM  =   DC1 !
 5    ! HEIGHT  =  32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4,
                   32.4,   32.4,   32.4,   32.4,   32.4,   32.4!
 5    ! WIDTH  =   55.53,   54.75,   52.5,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   57.5,   55.0,   50.0,
                   44.0,   36.5,   42.0,   47.75,   52.0,   54.62,
                   55.53,   54.75,   52.25,   48.25,   47.0,   52.5,
                   56.5,   59.0,   59.5,   58.0,   55.0,   50.0,
                   44.0,   36.0,   42.0,   47.75,   52.0,   54.56!
 5    ! LENGTH =   58.0,   55.0,   50.0,   44.0,   36.0,   42.0,
                   47.75,   52.0,   54.62,   55.5,   54.75,   52.5,
                   48.5,   47.0,   52.5,   56.5,   58.5,   59.5,
                   58.0,   55.0,   50.0,   43.5,   36.0,   42.25,
```

```
                  47.75,   52.0,   54.56,   55.53,   54.88,   52.5,
                  48.25,   47.0,   52.5,   56.5,   59.0,   59.0!
 5    ! XBADJ  =   -27.5,   -28.5,   -29.0,   -28.0,   -26.5,   -31.5,
                  -36.0,   -39.5,   -41.75,   -42.72,   -42.5,   -41.0,
                  -38.0,   -36.0,   -37.0,   -37.0,   -36.0,   -34.0,
                  -30.0,   -26.0,   -21.0,   -15.0,   -9.5,   -10.75,
                  -11.75,   -12.5,   -12.81,   -12.81,   -12.5,   -
11.75,
                  -10.5,   -11.0,   -15.5,   -19.0,   -22.5,   -25.5!
 5    ! YBADJ  =   14.89,   15.0,   14.5,   13.62,   12.5,   10.75,
                  8.75,   6.5,   4.25,   1.25,   -1.5,   -4.0,
                  -6.0,   -8.75,   -10.5,   -12.12,   -13.5,   -14.44,
                  -14.98,   -15.0,   -14.38,   -13.88,   -12.5,   -
10.75,
                  -9.25,   -6.5,   -3.75,   -1.5,   1.0,   3.5,
                  6.5,   8.5,   10.5,   12.12,   13.5,   14.47!
!END!
```

---

[a] Building height, width, length, and X/Y offset from the source are treated as a separate input subgroup for each source and therefore must end with an input group terminator. The X/Y offset is the position, relative to the stack, of the center of the upwind face of the projected building, with the x-axis pointing along the flow direction.

Subgroup (13d)

POINT SOURCE: VARIABLE EMISSIONS DATA [a]

Use this subgroup to describe temporal variations in the emission rates given in 13b. Factors entered multiply the rates in 13b. Skip sources here that have constant emissions. For more elaborate variation in source parameters, use PTEMARB.DAT and NPT2 > 0.

IVARY determines the type of variation, and is source-specific:

(IVARY) Default: 0

- 0 = Constant
- 1 = Diurnal cycle (24 scaling factors: hours 1-24)
- 2 = Monthly cycle (12 scaling factors: months 1-12)
- 3 = Hour & Season (4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
- 4 = Speed & Stab. (6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
- 5 = Temperature (12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

----
[a] Data for each species are treated as a separate input subgroup and therefore must end with an input group terminator.

INPUT GROUPS: 14a, 14b, 14c, 14d -- Area source parameters

Subgroup (14a)

Number of polygon area sources with parameters specified below (NAR1) No default ! NAR1 = 0 !

Units used for area source emissions below (IARU) Default: 1 ! IARU = 1 !

1 = g/m**2/s
2 = kg/m**2/hr
3 = lb/m**2/hr
4 = tons/m**2/yr
5 = Odour Unit * m/s (vol. flux/m**2 of odour compound)
6 = Odour Unit * m/min
7 = metric tons/m**2/yr

Number of source-species combinations with variable emissions scaling factors provided below in (14d) (NSAR1) Default: 0 ! NSAR1 = 0 !

Number of buoyant polygon area sources with variable location and emission parameters (NAR2) No default ! NAR2 = 0 !
(If NAR2 > 0, ALL parameter data for these sources are read from the file: BAEMARB.DAT)

!END!

Subgroup (14b)

---

[a]
AREA SOURCE: CONSTANT DATA

[b]

Source No.	Effect. Height (m)	Base Elevation (m)	Initial Sigma z (m)	Emission Rates
-------	------	------	--------	---------

----
[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

[b] An emission rate must be entered for every pollutant modeled. Enter emission rate of zero for secondary pollutants that are modeled, but not emitted. Units are specified by IARU (e.g. 1 for g/m**2/s).

Subgroup (14c)

Source No.	COORDINATES (km) FOR EACH VERTEX(4) OF EACH POLYGON[a] Ordered list of X followed by list of Y, grouped by source

----
[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

Subgroup (14d)

AREA SOURCE: VARIABLE EMISSIONS DATA[a]

Use this subgroup to describe temporal variations in the emission rates given in 14b. Factors entered multiply the rates in 14b. Skip sources here that have constant emissions. For more elaborate variation in source parameters, use BAEMARB.DAT and NAR2 > 0.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

- 0 = Constant
- 1 = Diurnal cycle (24 scaling factors: hours 1-24)
- 2 = Monthly cycle (12 scaling factors: months 1-12)
- 3 = Hour & Season (4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
- 4 = Speed & Stab. (6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
- 5 = Temperature (12 scaling factors, where temperature classes have upper bounds (C) of: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 50+)

```
--------
    a
     Data for each species are treated as a separate input subgroup
     and therefore must end with an input group terminator.


------------------------------------------------------------------------
-------

INPUT GROUPS: 15a, 15b, 15c -- Line source parameters
---------------------------

---------------
Subgroup (15a)
---------------

     Number of buoyant line sources
     with variable location and emission
     parameters (NLN2)                                  No default  !  NLN2
=  0   !

     (If NLN2 > 0, ALL parameter data for
      these sources are read from the file: LNEMARB.DAT)

     Number of buoyant line sources (NLINES)        No default   !
NLINES =  0  !

     Units used for line source
     emissions below               (ILNU)          Default: 1  !  ILNU
=   1  !
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
     provided below in (15c)        (NSLN1) Default: 0  !  NSLN1 =  0  !

     Maximum number of segments used to model
     each line (MXNSEG)                                 Default: 7   !
MXNSEG =  7  !

     The following variables are required only if NLINES > 0.  They are
     used in the buoyant line source plume rise calculations.

        Number of distances at which                    Default: 6   !
NLRISE =  6  !
        transitional rise is computed

        Average building length (XL)                    No default   ! XL =
.0 !
                                                        (in meters)

        Average building height (HBL)                   No default   ! HBL =
.0 !
```

(in meters)

Average building width (WBL) No default ! WBL = .0 !

(in meters)

Average line source width (WML) No default ! WML = .0 !

(in meters)

Average separation between buildings (DXL) No default ! DXL = .0 !

(in meters)

Average buoyancy parameter (FPRIMEL) No default ! FPRIMEL = .0 !

(in m**4/s**3)

!END!

Subgroup (15b)

BUOYANT LINE SOURCE: CONSTANT DATA

---

a

Source No.	Beg. X Coordinate (km)	Beg. Y Coordinate (km)	End. X Coordinate (km)	End. Y Coordinate (km)	Release Height (m)	Base Emission Elevation (m)	Emission Rates

---

a
Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

b
An emission rate must be entered for every pollutant modeled. Enter emission rate of zero for secondary pollutants that are modeled, but not emitted. Units are specified by ILNTU (e.g. 1 for g/s).

Subgroup (15c)

BUOYANT LINE SOURCE: VARIABLE EMISSIONS DATA a

Use this subgroup to describe temporal variations in the emission rates given in 15b. Factors entered multiply the rates in 15b. Skip sources here that have constant emissions.

IVARY determines the type of variation, and is source-specific:

```
     (IVARY)                                  Default: 0
           0 =       Constant
           1 =       Diurnal cycle (24 scaling factors: hours 1-24)
           2 =       Monthly cycle (12 scaling factors: months 1-12)
           3 =       Hour & Season (4 groups of 24 hourly scaling
factors,
                                    where first group is DEC-JAN-FEB)
           4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                    first group is Stability Class A,
                                    and the speed classes have upper
                                    bounds (m/s) defined in Group 12
           5 =       Temperature   (12 scaling factors, where
temperature
                                    classes have upper bounds (C) of:
                                    0, 5, 10, 15, 20, 25, 30, 35, 40,
                                    45, 50, 50+)



--------
    a
     Data for each species are treated as a separate input subgroup
     and therefore must end with an input group terminator.


-------------------------------------------------------------------------
-------


INPUT GROUPS: 16a, 16b, 16c -- Volume source parameters
---------------------------

---------------
Subgroup (16a)
---------------

     Number of volume sources with
     parameters provided in 16b,c (NVL1)     No default  !  NVL1 =  0
!

     Units used for volume source
     emissions below in 16b       (IVLU)     Default: 1  !  IVLU =   1
!
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
     provided below in (16c)      (NSVL1)    Default: 0  !  NSVL1 =  0
!

     Number of volume sources with
     variable location and emission
     parameters                   (NVL2)     No default  !  NVL2 =   0
```

!

(If NVL2 > 0, ALL parameter data for
these sources are read from the VOLEMARB.DAT file(s))

!END!

Subgroup (16b)

VOLUME SOURCE: CONSTANT DATA [a]

---

[b]

X Coordinate (km)	Y Coordinate (km)	Effect. Height (m)	Base Elevation (m)	Initial Sigma y (m)	Initial Sigma z (m)	Emission Rates

---

[a] Data for each source are treated as a separate input subgroup and therefore must end with an input group terminator.

[b] An emission rate must be entered for every pollutant modeled. Enter emission rate of zero for secondary pollutants that are modeled, but not emitted. Units are specified by IVLU (e.g. 1 for g/s).

Subgroup (16c)

VOLUME SOURCE: VARIABLE EMISSIONS DATA [a]

Use this subgroup to describe temporal variations in the emission rates given in 16b. Factors entered multiply the rates in 16b. Skip sources here that have constant emissions. For more elaborate variation in source parameters, use VOLEMARB.DAT and NVL2 > 0.

IVARY determines the type of variation, and is source-specific:
(IVARY) Default: 0

- 0 = Constant
- 1 = Diurnal cycle (24 scaling factors: hours 1-24)
- 2 = Monthly cycle (12 scaling factors: months 1-12)
- 3 = Hour & Season (4 groups of 24 hourly scaling factors, where first group is DEC-JAN-FEB)
- 4 = Speed & Stab. (6 groups of 6 scaling factors, where first group is Stability Class A, and the speed classes have upper bounds (m/s) defined in Group 12
- 5 = Temperature (12 scaling factors, where

temperature
classes have upper bounds (C) of:
0, 5, 10, 15, 20, 25, 30, 35, 40,
45, 50, 50+)

---

[a] Data for each species are treated as a separate input subgroup and therefore must end with an input group terminator.

INPUT GROUPS: 17a & 17b -- Non-gridded (discrete) receptor information

---

Subgroup (17a)

Number of non-gridded receptors (NREC) No default ! NREC = 3621
!

!END!

Subgroup (17b)

NON-GRIDDED (DISCRETE) RECEPTOR DATA[a]

Receptor No.	X Coordinate (km)	Y Coordinate (km)	Ground Elevation (m)	Height Above Ground[b] (m)

---

[a] Data for each receptor are treated as a separate input subgroup and therefore must end with an input group terminator.

[b] Receptor height above ground is optional. If no value is entered, the receptor is placed on the ground.

ATTACHMENT E

Contour Plots

Jacques Whitford

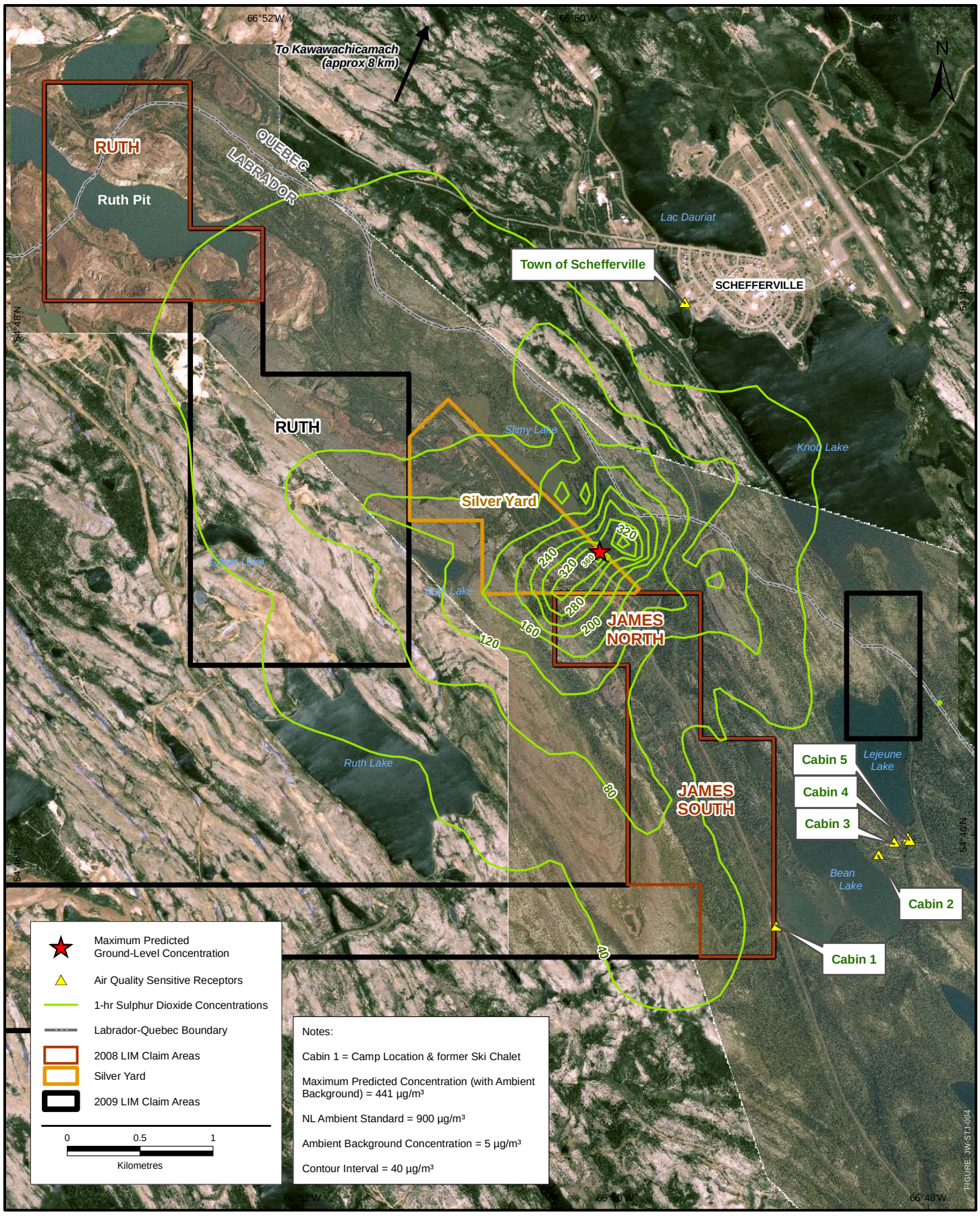

FIGURE NO:		DRAFT DATE:
E-1	**Maximum Predicted 1-hr Total Sulphur Dioxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

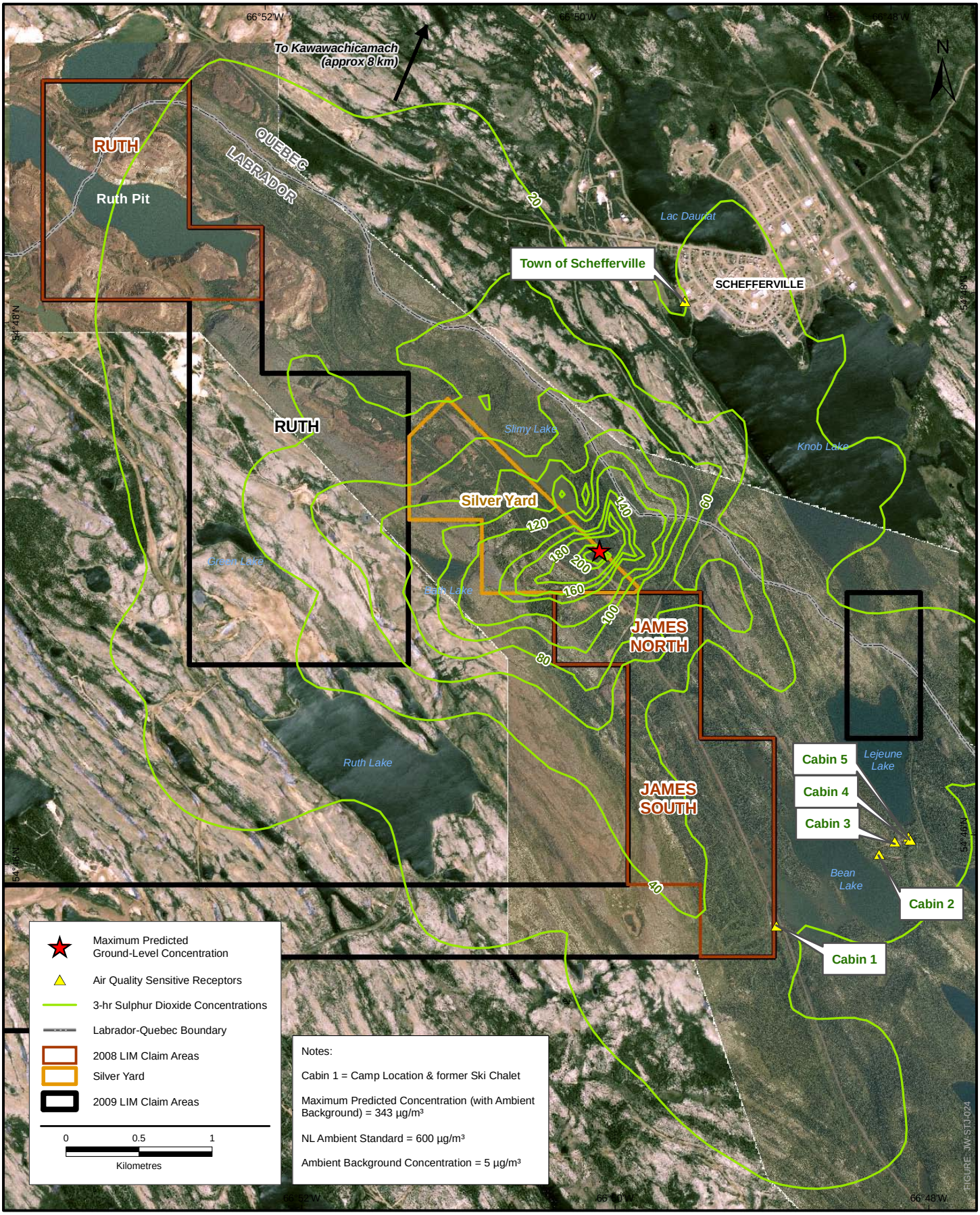

FIGURE NO:	Maximum Predicted 3-hr Sulphur Dioxide Ground-level Concentrations	DRAFT DATE: 08/12/2008
E-2		REVISION DATE: 12/8/2009

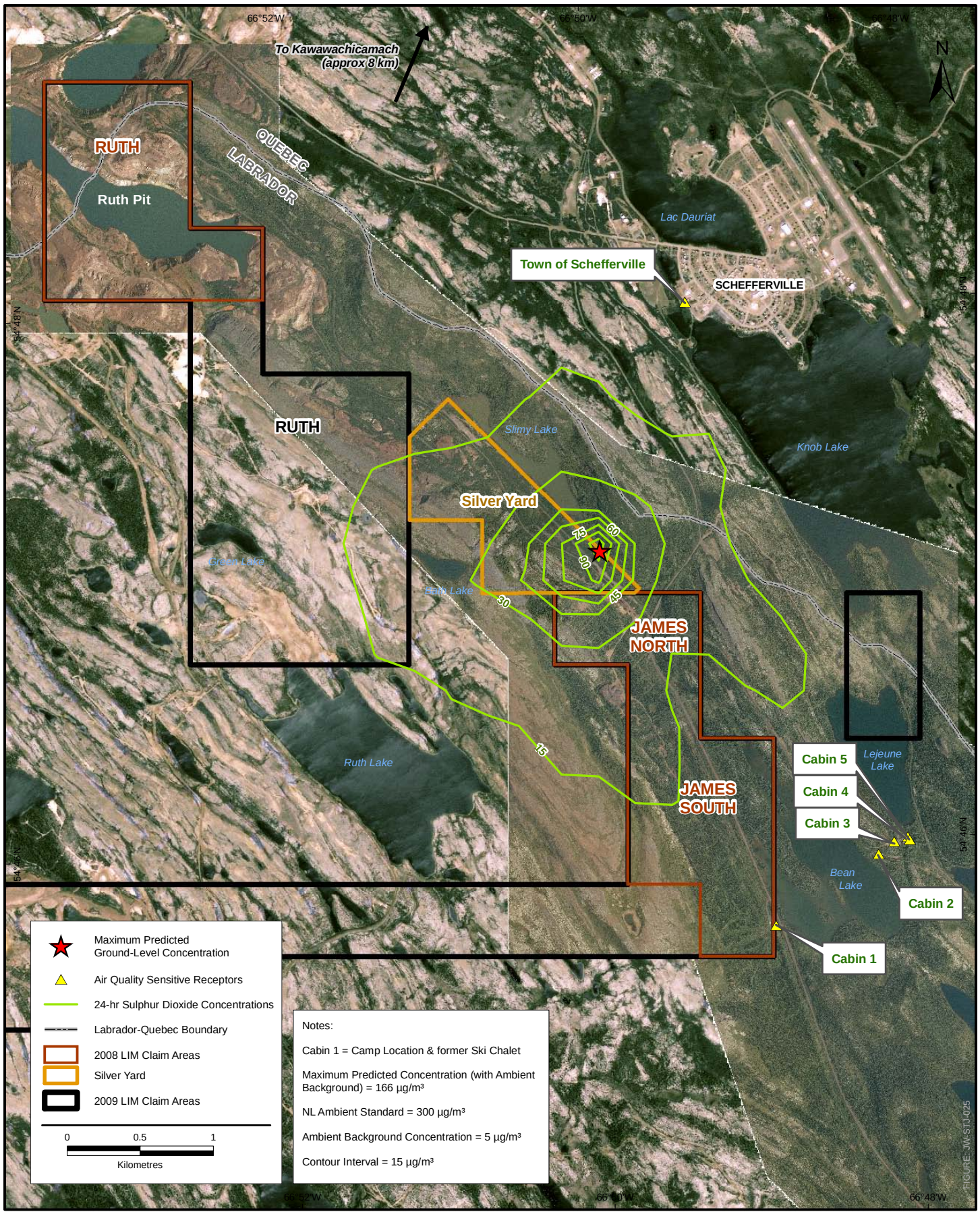

FIGURE NO:		DRAFT DATE:
E-3	**Maximum Predicted 24-hr Sulphur Dioxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

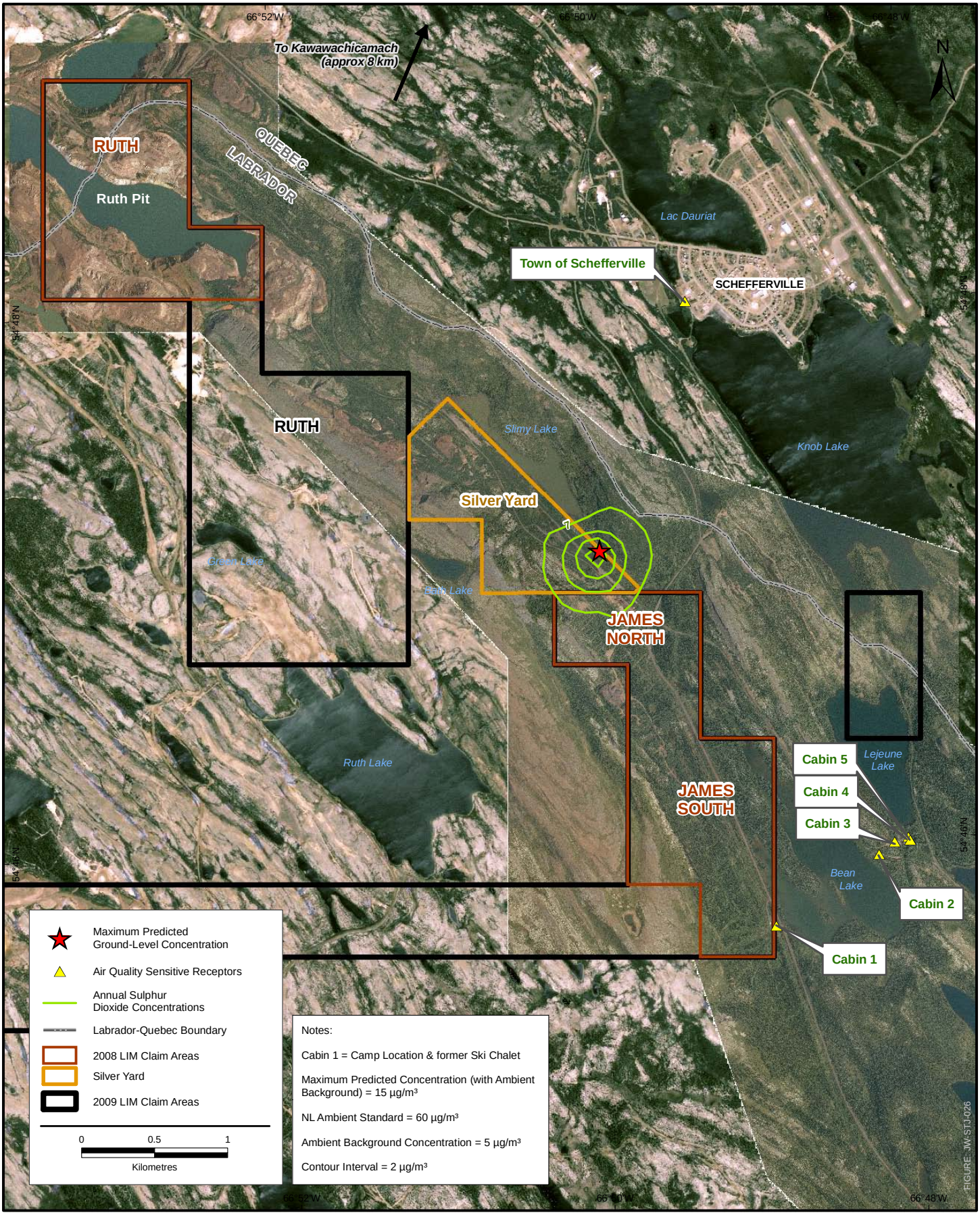

FIGURE NO:		DRAFT DATE:
E-4	**Maximum Predicted Annual Sulphur Dioxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

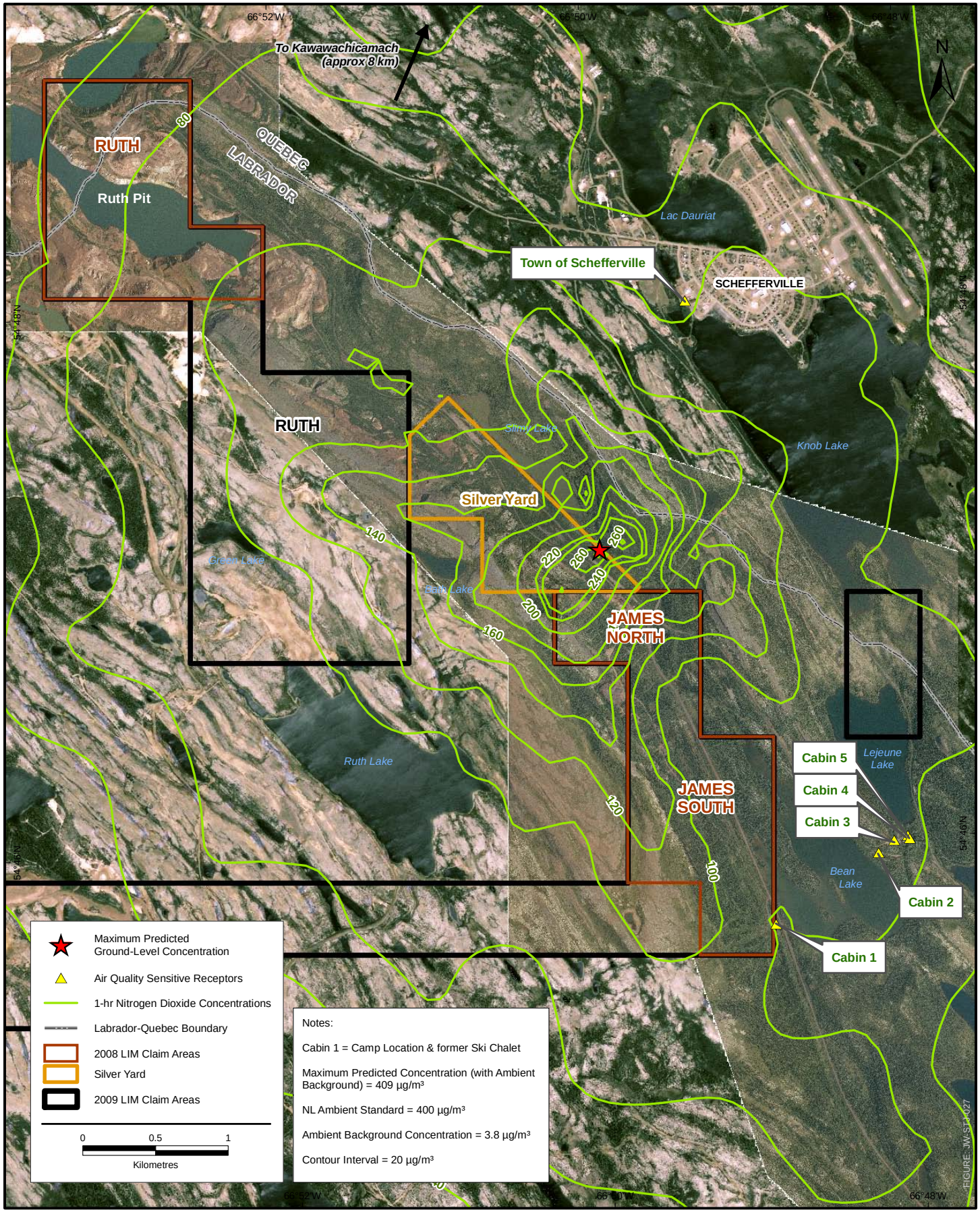

FIGURE NO:		DRAFT DATE:
E-5	**Maximum Predicted 1-hr Nitrogen Dioxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

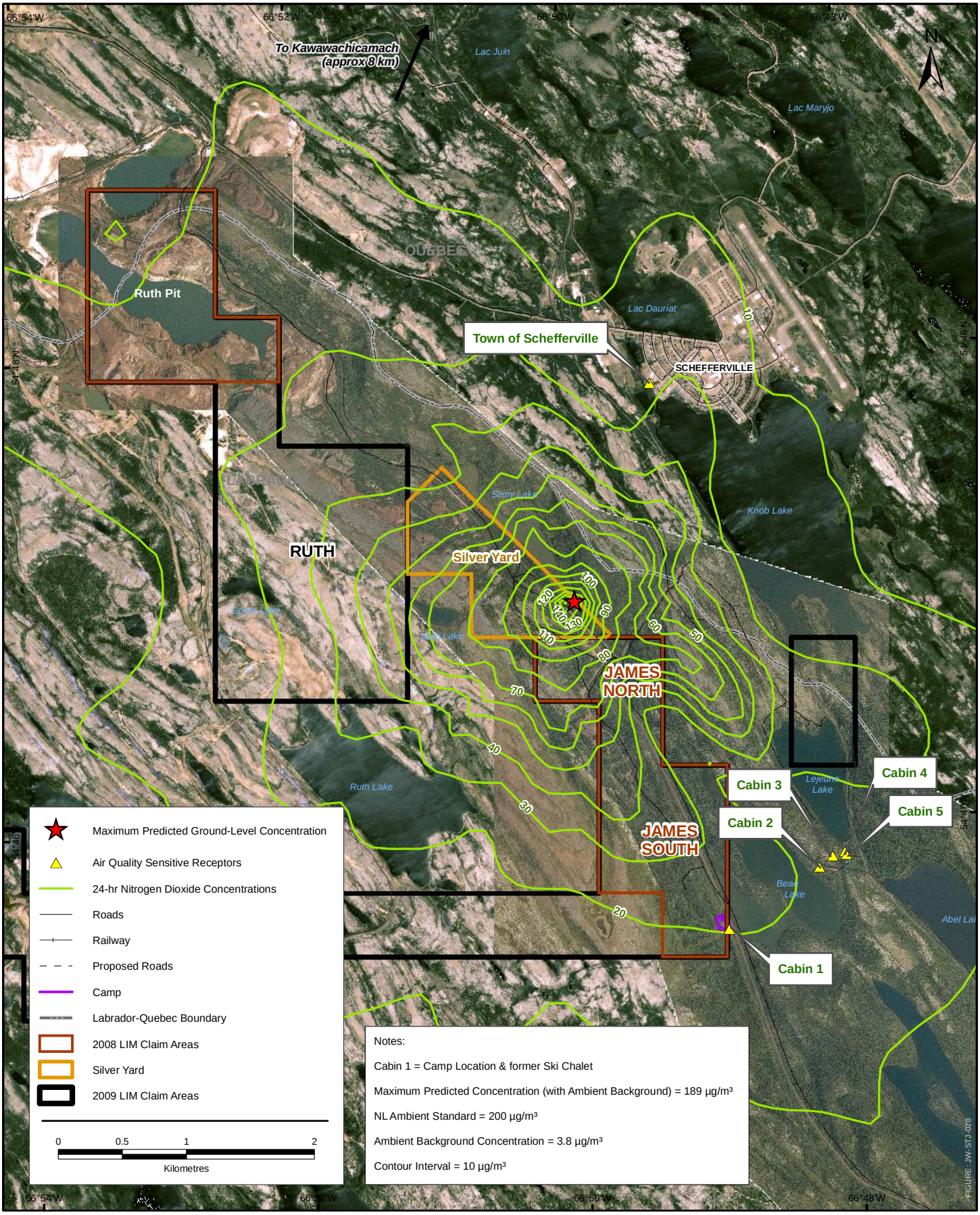

FIGURE NO:		DRAFT DATE:
E-6	**Maximum Predicted 24-hr Nitrogen Dioxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 13/8/2009

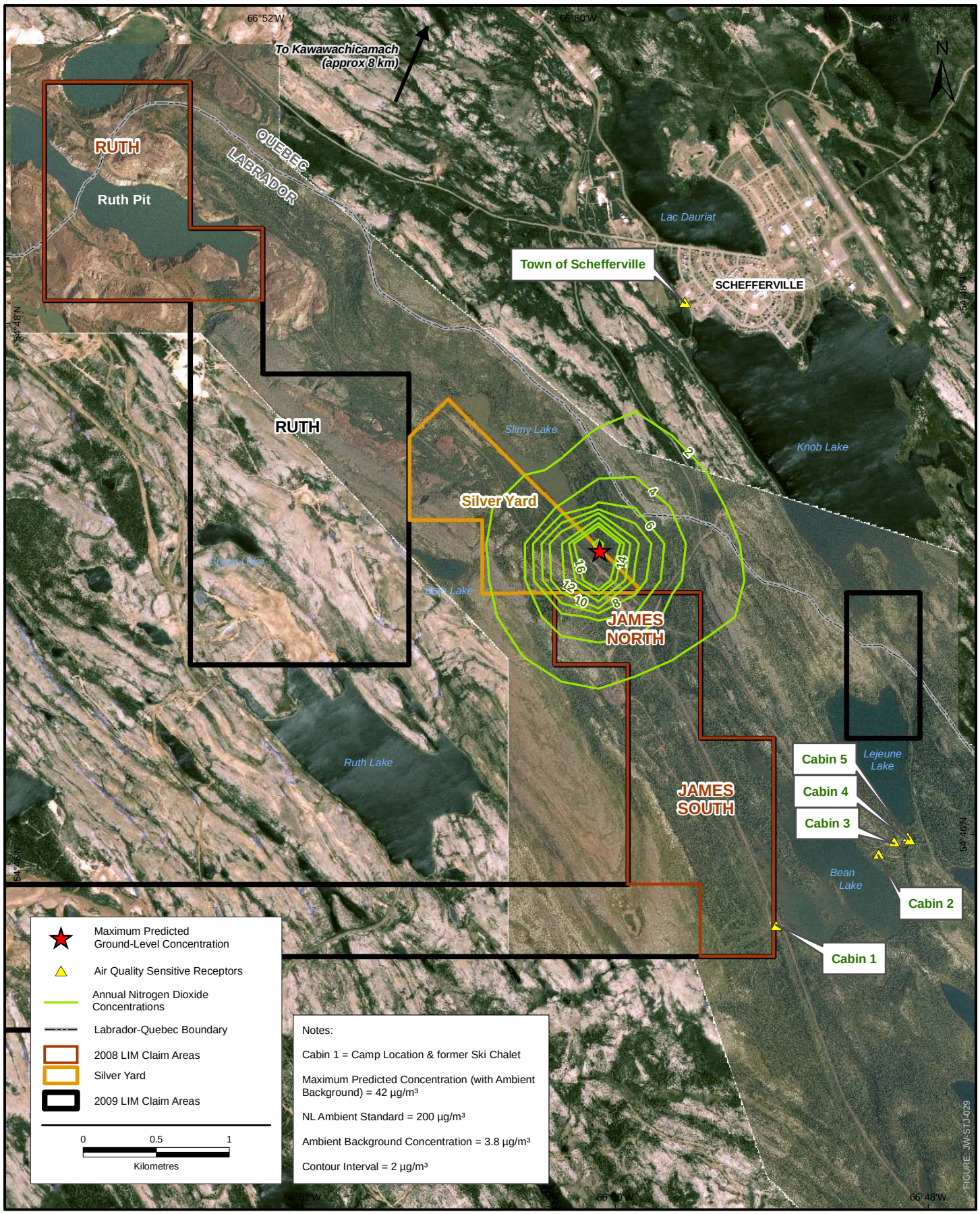

FIGURE NO:		DRAFT DATE:
E-7	**Maximum Predicted Annual Nitrogen Dioxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

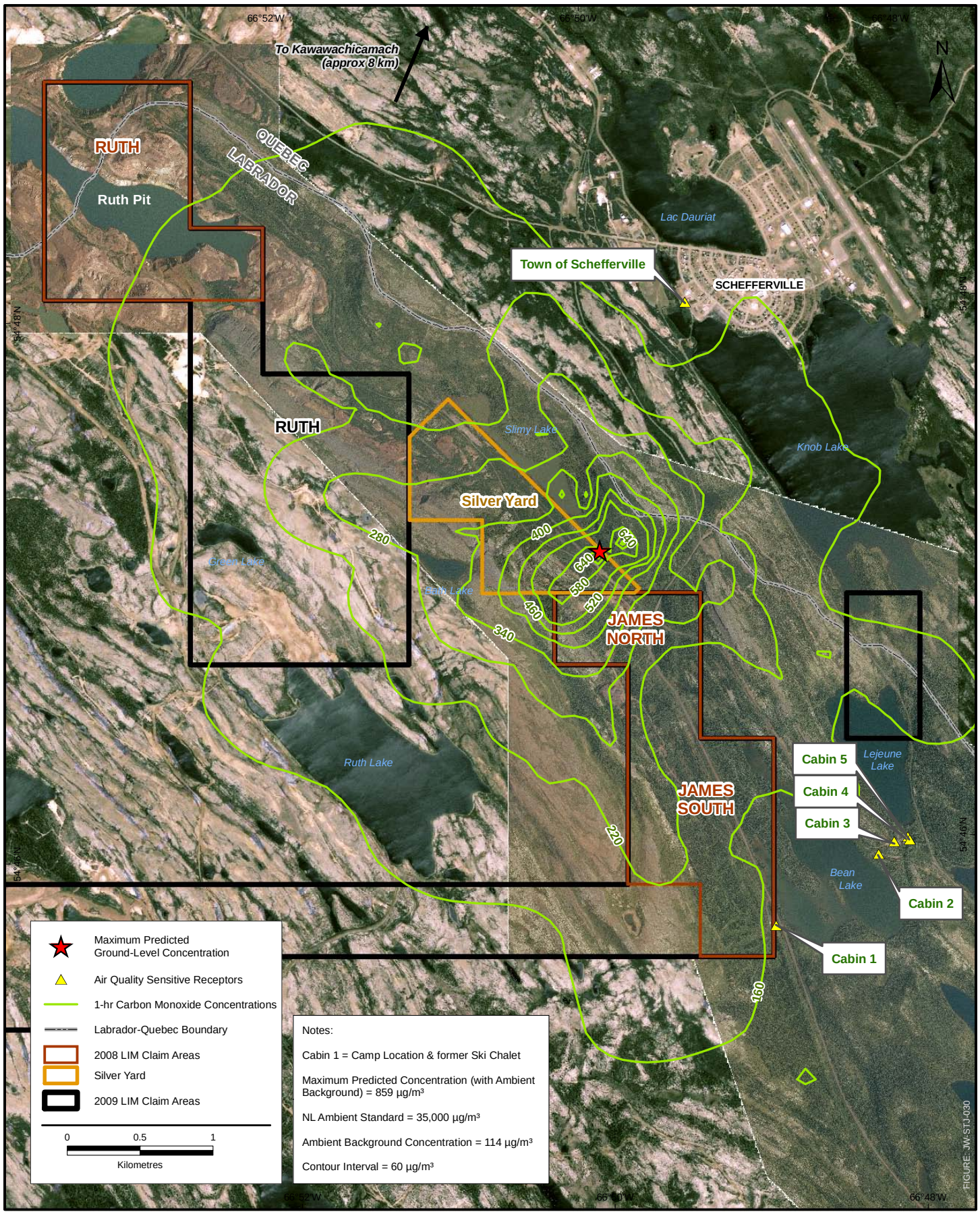

FIGURE NO:		DRAFT DATE:
E-8	**Maximum Predicted 1-hr Carbon Monoxide Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

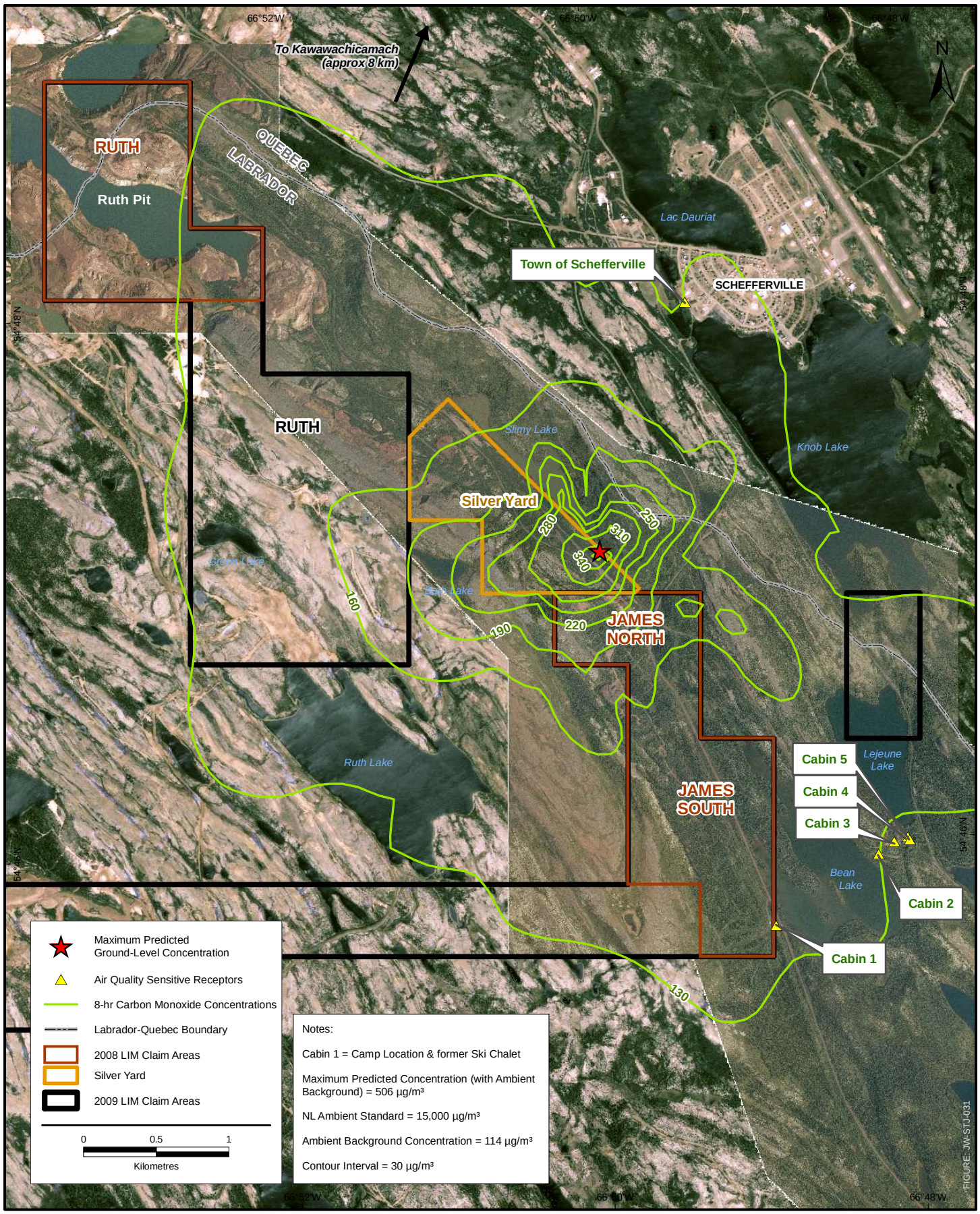

FIGURE NO:	Maximum Predicted 8-hr Carbon Monoxide Ground-level Concentrations	DRAFT DATE:
E-9		08/12/2008
		REVISION DATE: 12/8/2009

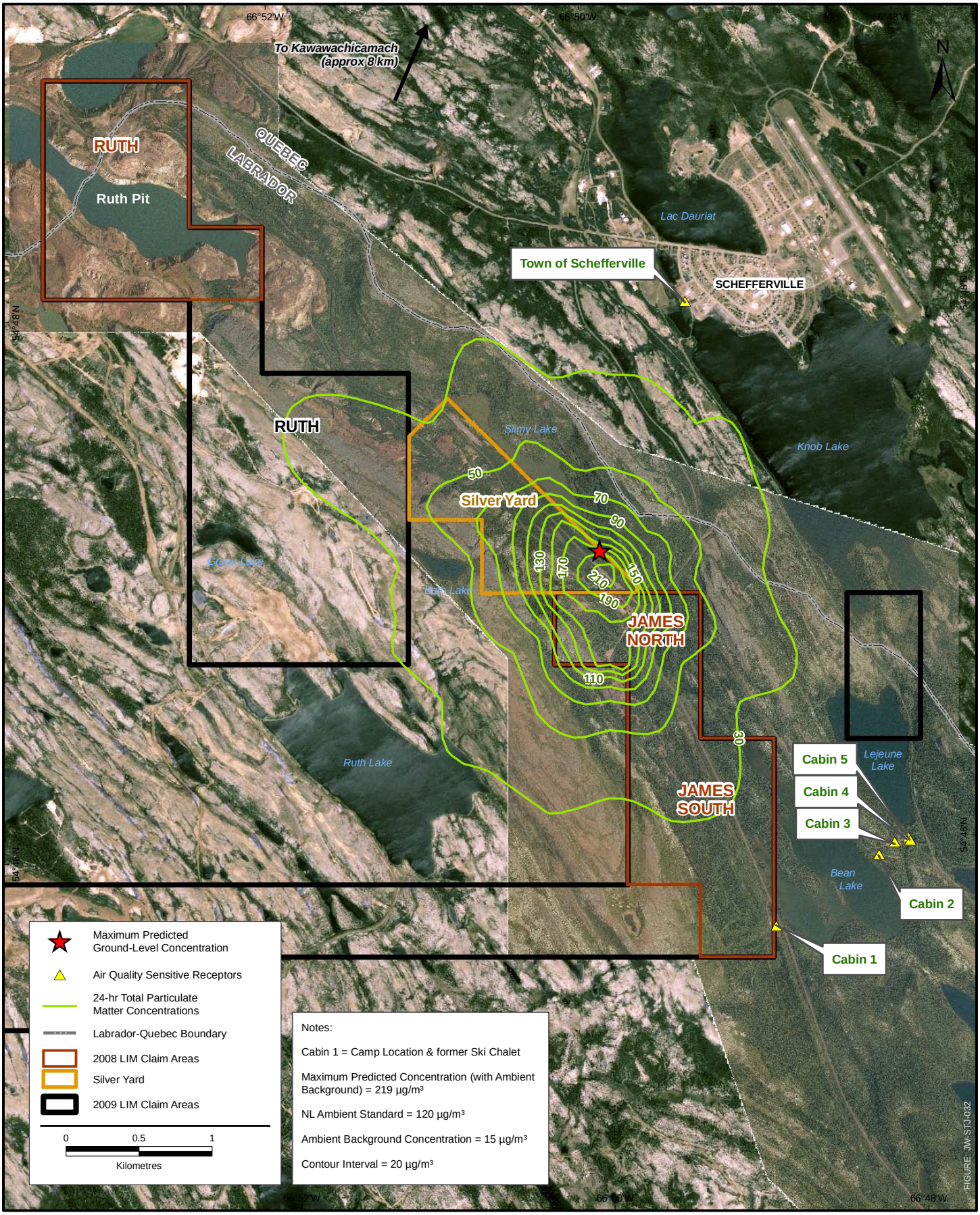

FIGURE NO:		DRAFT DATE:
E-10	**Maximum Predicted 24-hr Total Particulate matter Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

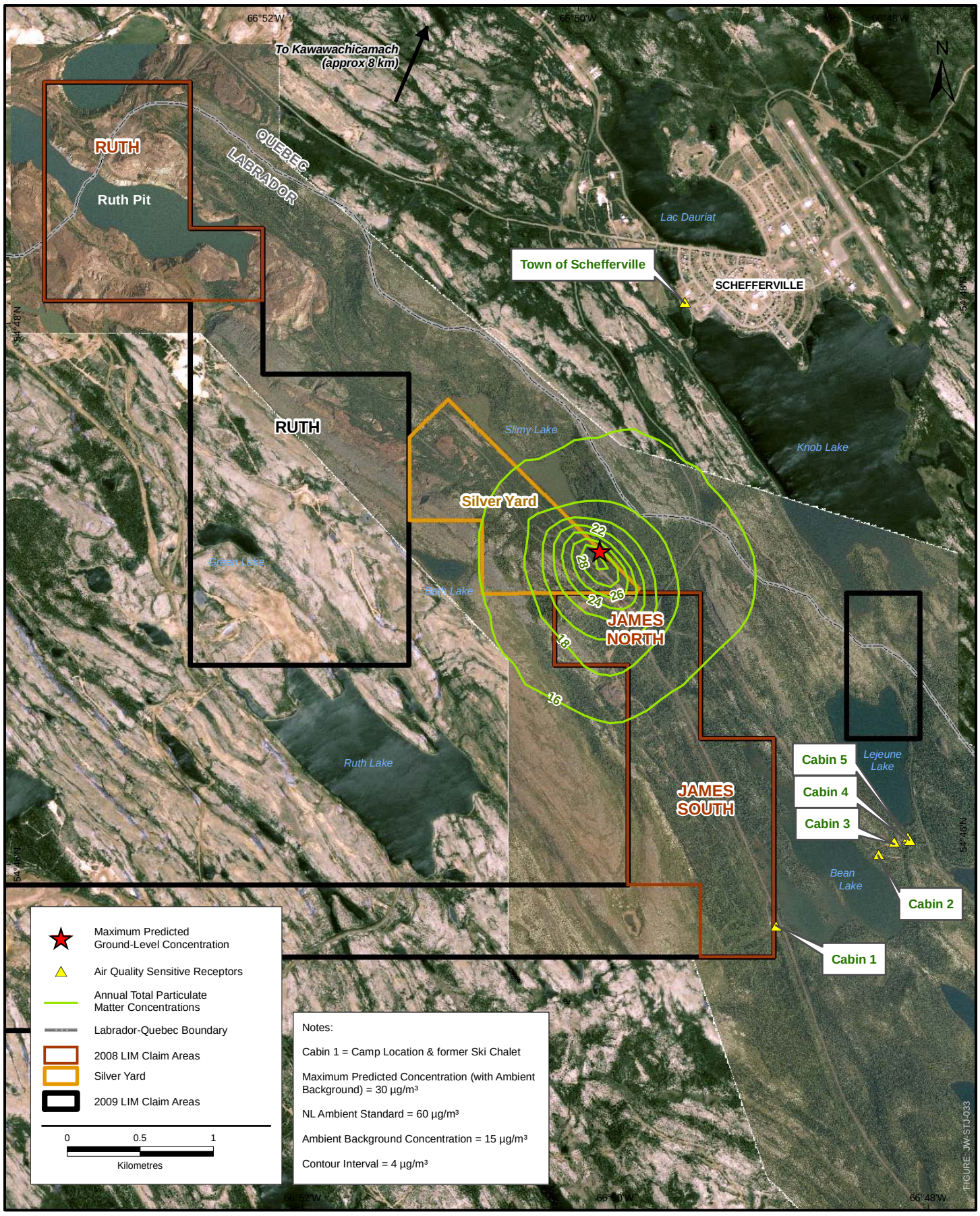

FIGURE NO:		DRAFT DATE:
E-11	**Maximum Predicted Annual Total Particulate matter Ground-level Concentrations**	08/12/2008
		REVISION DATE: 12/8/2009

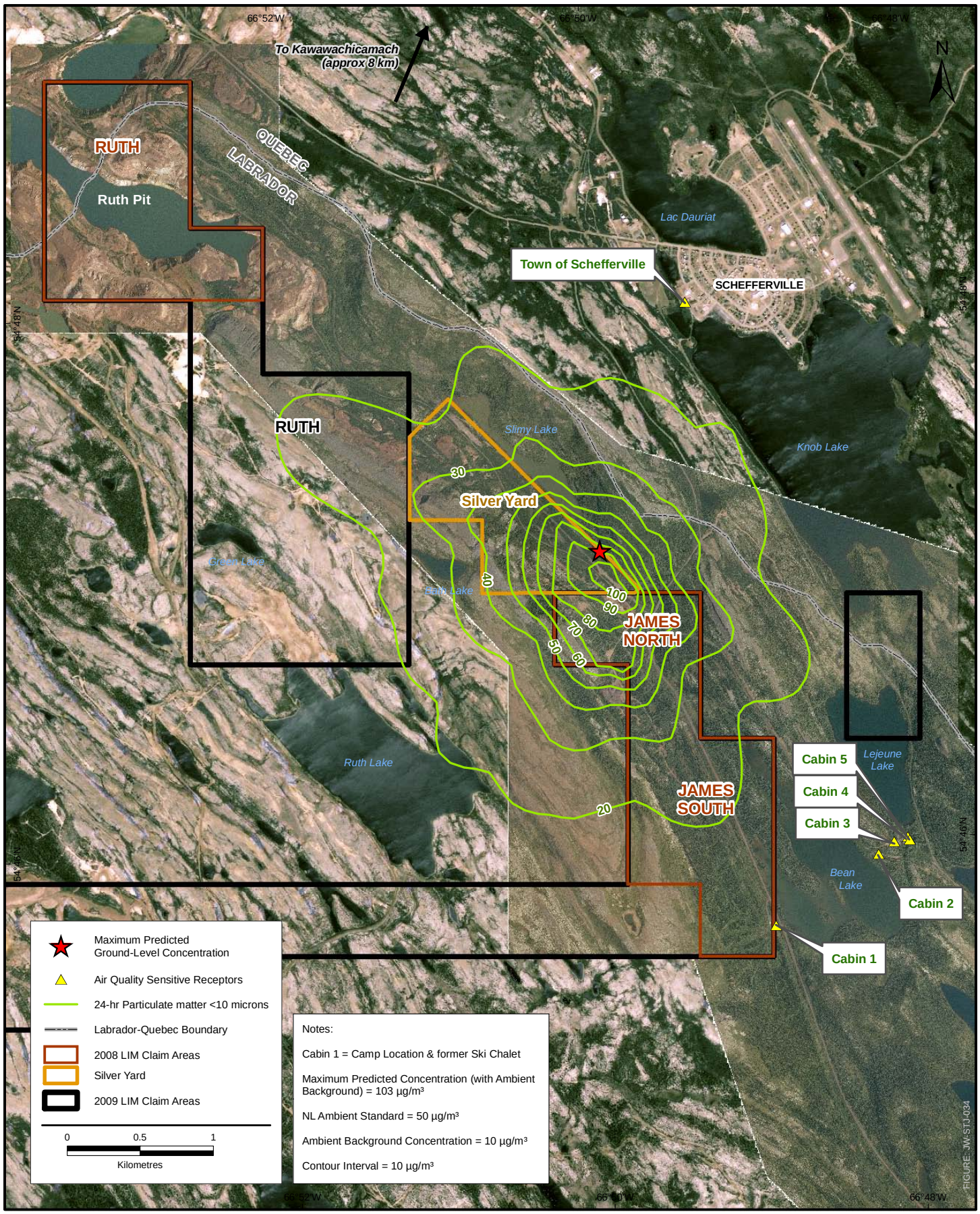

FIGURE NO:		DRAFT DATE:
E-12	**Maximum Predicted 24-hr Ground-level Concentrations Particulate matter less than 10 microns**	08/12/2008
		REVISION DATE: 12/8/2009

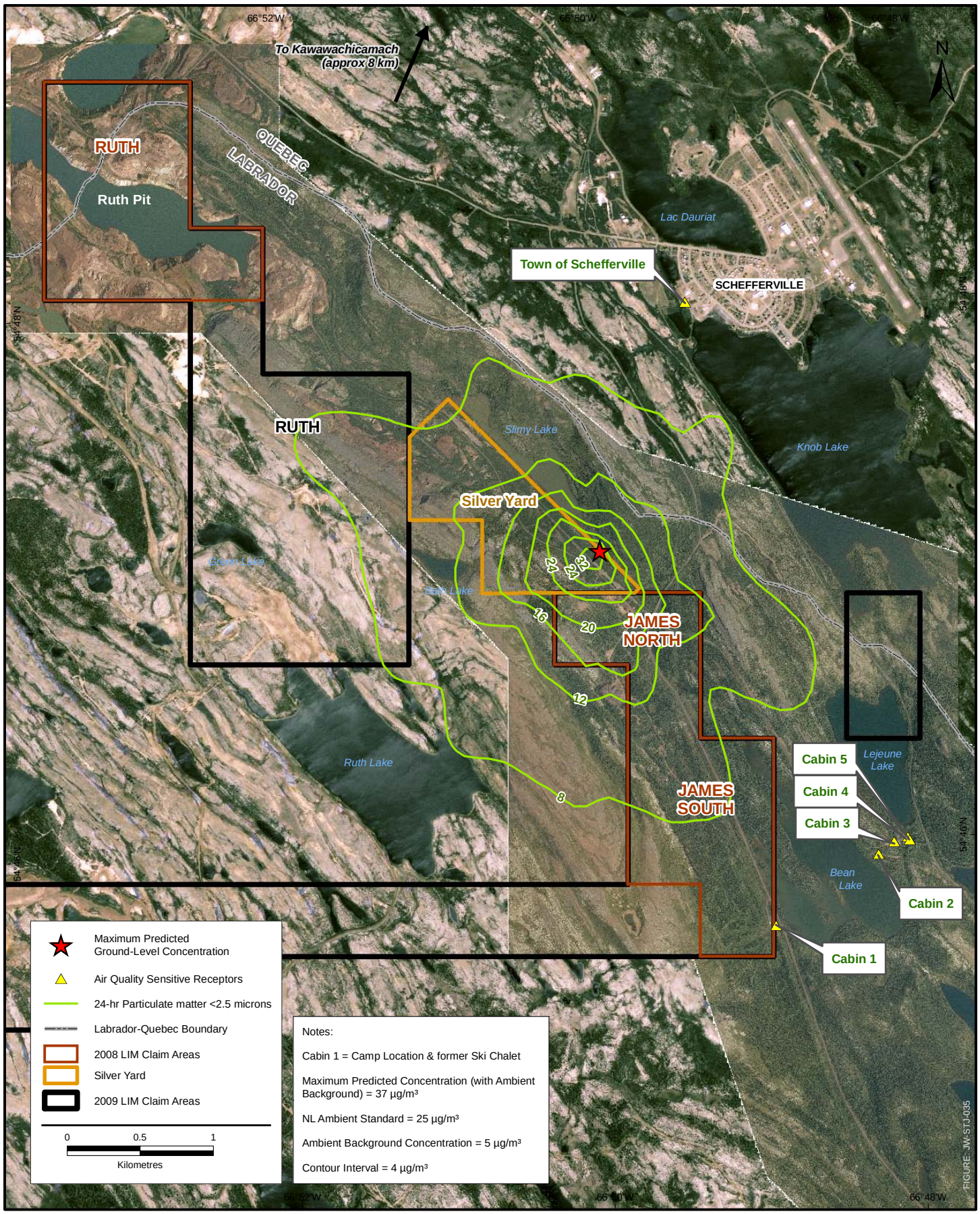

FIGURE NO:		DRAFT DATE:
E-13	**Maximum Predicted 24-hr Ground-level Concentrations Particulate matter less than 2.5 microns**	08/12/2008
		REVISION DATE: 12/8/2009

ATTACHMENT F

Maximum Predicted Concentrations at Sensitive Receptor Locations

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Table F-1- Summary of Maximum Predicted Ground-Level Concentrations at Schefferville - (639939.60, 6074715.34)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background Concentration ($\mu g/m^3$)	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with Background ($\mu g/m^3$)	Percent of Criteria (%)
NO_2	1 hr	400	3.8	75.9	80	20%
	24 hr	200	3.8	17.4	21	11%
	ann	100	3.8	0.7	5	5%
SO_2	1 hr	900	5	19.4	24	3%
	3 hr	600	5	14.1	19	3%
	24 hr	300	5	4.5	10	3%
	ann	60	5	0.2	5	9%
TSP	1 hr	-	15	40.0	55	n/a
	24 hr	120	15	8.7	24	20%
	ann	60	15	0.3	15	26%
PM_{10}	1 hr	-	10	25.6	36	n/a
	24 hr	50	10	5.4	15	31%
$PM_{2.5}$	1 hr	-	5	6.7	12	n/a
	24 hr	25	5	1.5	7	26%
CO	1 hr	35,000	114	33.2	147	0%
	8 hr	15,000	114	16.2	130	1%

Table F-2- Summary of Maximum Predicted Ground-Level Concentrations at Cabin 1- (640.569, 6070.471)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background Concentration ($\mu g/m^3$)	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with Background ($\mu g/m^3$)	Percent of Criteria (%)
NO_2	1 hr	400	3.8	77.0	81	20%
	24 hr	200	3.8	20.9	25	12%
	ann	100	3.8	0.3	4	4%
SO_2	1 hr	900	5	19.7	25	3%
	3 hr	600	5	15.2	20	3%
	24 hr	300	5	5.5	10	3%
	ann	60	5	0.1	5	8%
TSP	1 hr	-	15	31.8	47	n/a
	24 hr	120	15	7.4	22	19%
	ann	60	15	0.1	15	25%
PM_{10}	1 hr	-	10	24.4	34	n/a
	24 hr	50	10	7.4	17	35%
$PM_{2.5}$	1 hr	-	5	6.7	12	n/a
	24 hr	25	5	1.7	7	27%
CO	1 hr	35,000	114	33.7	148	0%
	8 hr	15,000	114	16.1	130	1%

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Table F-3- Summary of Maximum Predicted Ground-Level Concentrations at Cabin 2 - (641.271, 6070.926)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background Concentration ($\mu g/m^3$)	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with Background ($\mu g/m^3$)	Percent of Criteria (%)
	1 hr	400	3.8	85.0	89	22%
	24 hr	200	3.8	17.6	21	11%
NO_2	ann	100	3.8	0.4	4	4%
	1 hr	900	5	25.6	31	3%
	3 hr	600	5	21.0	26	4%
	24 hr	300	5	4.5	10	3%
SO_2	ann	60	5	0.1	5	9%
	1 hr	-	15	27.6	43	n/a
	24 hr	120	15	6.9	22	18%
TSP	ann	60	15	0.2	15	25%
	1 hr	-	10	18.7	29	n/a
PM_{10}	24 hr	50	10	6.9	17	34%
	1 hr	-	5	6.8	12	n/a
$PM_{2.5}$	24 hr	25	5	1.5	7	26%
	1 hr	35,000	114	43.7	158	0%
CO	8 hr	15,000	114	16.4	130	1%

Table F-4- Summary of Maximum Predicted Ground-Level Concentrations at Cabin 3 - (641.376, 6071.014)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background Concentration ($\mu g/m^3$)	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with Background ($\mu g/m^3$)	Percent of Criteria (%)
NO_2	1 hr	400	3.8	83.5	87	22%
	24 hr	200	3.8	16.1	20	10%
	ann	100	3.8	0.4	4	4%
SO_2	1 hr	900	5	23.8	29	3%
	3 hr	600	5	20.1	25	4%
	24 hr	300	5	4.2	9	3%
	ann	60	5	0.1	5	9%
TSP	1 hr	-	15	27.1	42	n/a
	24 hr	120	15	6.5	22	18%
	ann	60	15	0.2	15	25%
PM_{10}	1 hr	-	10	20.6	31	n/a
	24 hr	50	10	4.9	15	30%
$PM_{2.5}$	1 hr	-	5	6.4	11	n/a
	24 hr	25	5	1.5	6	26%
CO	1 hr	35,000	114	40.6	155	0%
	8 hr	15,000	114	15.3	129	1%

Table F-5- Summary of Maximum Predicted Ground-Level Concentrations at Cabin 4 - (641.471, 6071.047)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with	Percent of Criteria (%)
NO_2	1 hr	400	3.8	82.3	86	22%
	24 hr	200	3.8	15.3	19	10%
	ann	100	3.8	0.4	4	4%
SO_2	1 hr	900	5	22.2	27	3%
	3 hr	600	5	19.0	24	4%
	24 hr	300	5	4.0	9	3%
	ann	60	5	0.1	5	9%
TSP	1 hr	-	15	24.0	39	n/a
	24 hr	120	15	6.0	21	17%
	ann	60	15	0.2	15	25%
PM_{10}	1 hr	-	10	18.3	28	n/a
	24 hr	50	10	4.5	15	29%
$PM_{2.5}$	1 hr	-	5	6.0	11	n/a
	24 hr	25	5	1.4	6	26%
CO	1 hr	35,000	114	37.9	152	0%
	8 hr	15,000	114	14.5	128	1%

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Table F-6- Summary of Maximum Predicted Ground-Level Concentrations at Cabin 5 - (641.484, 6071.026)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with	Percent of Criteria (%)
NO_2	1 hr	400	3.8	82.4	86	22%
	24 hr	200	3.8	15.3	19	10%
	ann	100	3.8	0.4	4	4%
SO_2	1 hr	900	5	22.3	27	3%
	3 hr	600	5	19.1	24	4%
	24 hr	300	5	4.0	9	3%
	ann	60	5	0.1	5	9%
TSP	1 hr	-	15	23.9	39	n/a
	24 hr	120	15	5.9	21	17%
	ann	60	15	0.2	15	25%
PM_{10}	1 hr	-	10	18.3	28	n/a
	24 hr	50	10	4.5	15	29%
$PM_{2.5}$	1 hr	-	5	6.0	11	n/a
	24 hr	25	5	1.4	6	26%
CO	1 hr	35,000	114	38.1	152	0%
	8 hr	15,000	114	14.3	128	1%

Table F-7- Summary of Maximum Predicted Ground-Level Concentrations at Cabin 6 - (642.233, 6068.097)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background Concentration ($\mu g/m^3$)	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with Background ($\mu g/m^3$)	Percent of Criteria (%)
	1 hr	400	3.8	37.4	41	10%
	24 hr	200	3.8	6.6	10	5%
NO_2	ann	100	3.8	0.1	4	4%
	1 hr	900	5	9.6	15	2%
	3 hr	600	5	6.4	11	2%
	24 hr	300	5	1.8	7	2%
SO_2	ann	60	5	0.03	5	8%
	1 hr	-	15	11.9	27	n/a
	24 hr	120	15	2.0	17	14%
TSP	ann	60	15	0.04	15	25%
	1 hr	-	10	8.9	19	n/a
PM_{10}	24 hr	50	10	1.6	12	23%
	1 hr	-	5	3.0	8	n/a
$PM_{2.5}$	24 hr	25	5	0.5	6	22%
	1 hr	35,000	114	16.4	130	0%
CO	8 hr	15,000	114	6.7	121	1%

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Table F-8- Summary of Maximum Predicted Ground-Level Concentrations at Recreational Camp - (642.789, 6068.313)

Air Contaminant	Averaging Period	Regulatory Standard ($\mu g/m^3$)	Estimated Background Concentration ($\mu g/m^3$)	Maximum Predicted Concentration ($\mu g/m^3$)	Predicted Concentration with Background ($\mu g/m^3$)	Percent of Criteria (%)
	1 hr	400	3.8	26.7	30	8%
	24 hr	200	3.8	6.0	10	5%
NO_2	ann	100	3.8	0.1	4	4%
	1 hr	900	5	7.0	12	1%
	3 hr	600	5	5.8	11	2%
	24 hr	300	5	1.6	7	2%
SO_2	ann	60	5	0.03	5	8%
	1 hr	-	15	9.0	24	n/a
	24 hr	120	15	1.7	17	14%
TSP	ann	60	15	0.04	15	25%
	1 hr	-	10	7.0	17	n/a
PM_{10}	24 hr	50	10	1.4	11	23%
	1 hr	-	5	2.2	7	n/a
$PM_{2.5}$	24 hr	25	5	0.5	5	22%
	1 hr	35,000	114	11.7	126	0%
CO	8 hr	15,000	114	4.6	119	1%

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