Appendix A Process Flow Diagram

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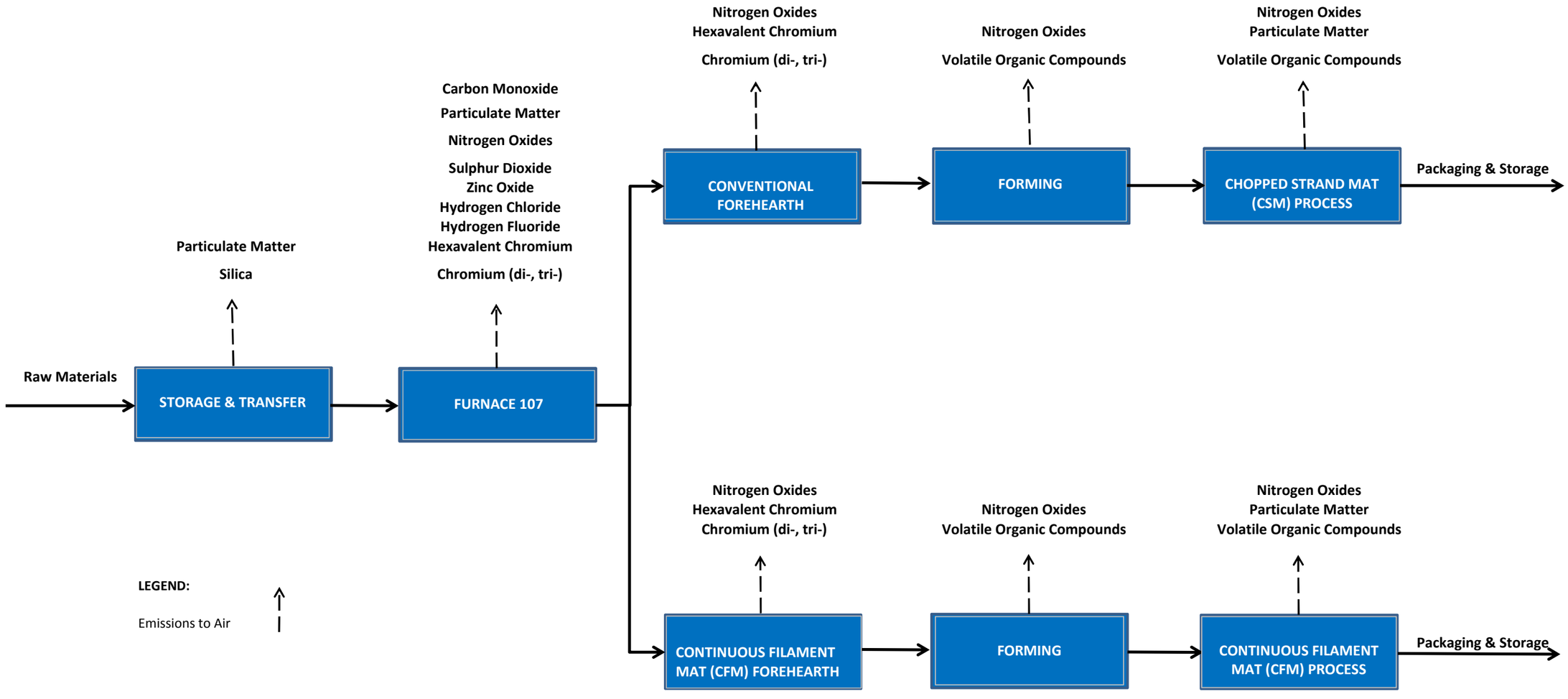
Owens Corning Guelph Glass Plant
Simplified Process Flow Diagram (PFD)



Appendix B Site Drawings

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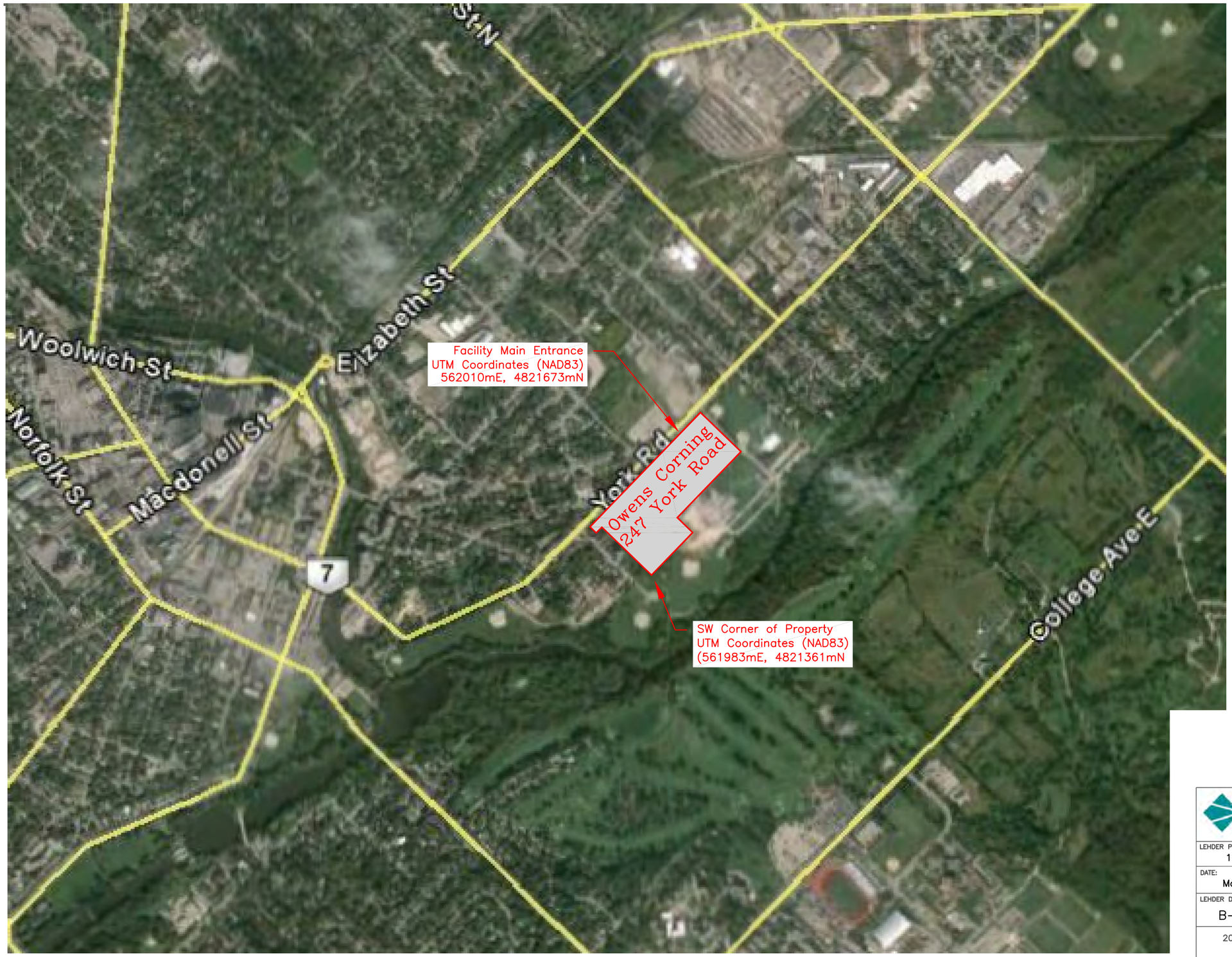

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LEHDER PROJECT NUMBER: 144539AA	Owens Corning Canada Guelph Glass Plant
DATE: March 2015	**Area Location Plan** **247 York Road, Guelph, Ontario**
LEHDER DRAWING NUMBER: B–154245	

200m 100m 0 250m 500m

SCALE: 1:10,000 (1mm=10meter)

W:\DRAWINGS\154245.dwg

Revisions:
Dec 2014: Created from drawing B-044112R5 (converted from site coordinates to UTM coordinates)
March 2015: renamed source G52 to G65

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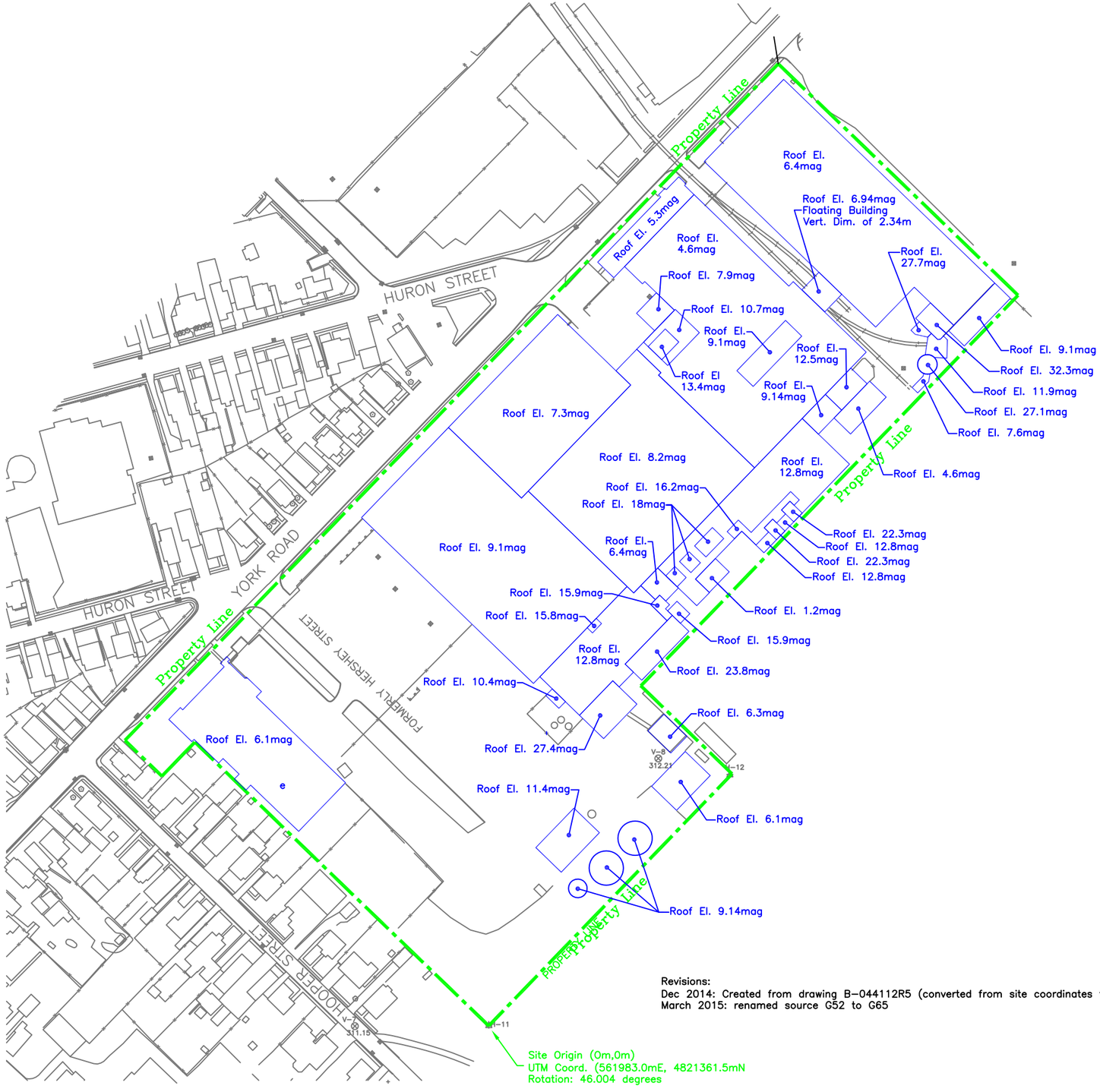
LEHDER PROJECT NUMBER: 144539AA	Guelph Glass Plant Owens Corning Canada
DATE: March 2015	
LEHDER DRAWING NUMBER: B-144244A	Site Plan and Emission Source Inventory

40m 20m 0 50m 100m

SCALE: 1:2000 (1mm=2meter)

W:\DRAWINGS\144244A.dwg



Revisions:
Dec 2014: Created from drawing B-044112R5 (converted from site coordinates to UTM coordinates)
March 2015: renamed source G52 to G65

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LEHDER PROJECT NUMBER: 144539AA	Guelph Glass Plant Owens Corning Canada
DATE: March 2015	
LEHDER DRAWING NUMBER: B-144244A	**Site Plan with Property Line and Roof Elevations**

40m 20m 0 50m 100m

SCALE: 1:2000 (1mm=2meter)

W:\DRAWINGS\144244A.dwg

Wind Center V1
Owens Corning Main plant
207m Long X 149m Wide
Height 9.1m above grade
Site Coordinates (226m, 126m)

Wind Center V2
Owens Corning Building #2
58m Long X 139m Wide
Height 5.4m above grade
Site Coordinates (362m, 127m)

HURON STREET

HURON STREET

YORK ROAD

(−21m,203m)

(394m,203m)

207m

58m

(0m,180m)

(−21m,180m)

FORMERLY HERSHEY STREET

149m

Location of all Maximum Concentrations

139m

HOOPER STREET

(155m,56m)

(394m,56m)

PROPERTY LINE

SITE ORIGIN
(0m,0m)

(155m,0m)

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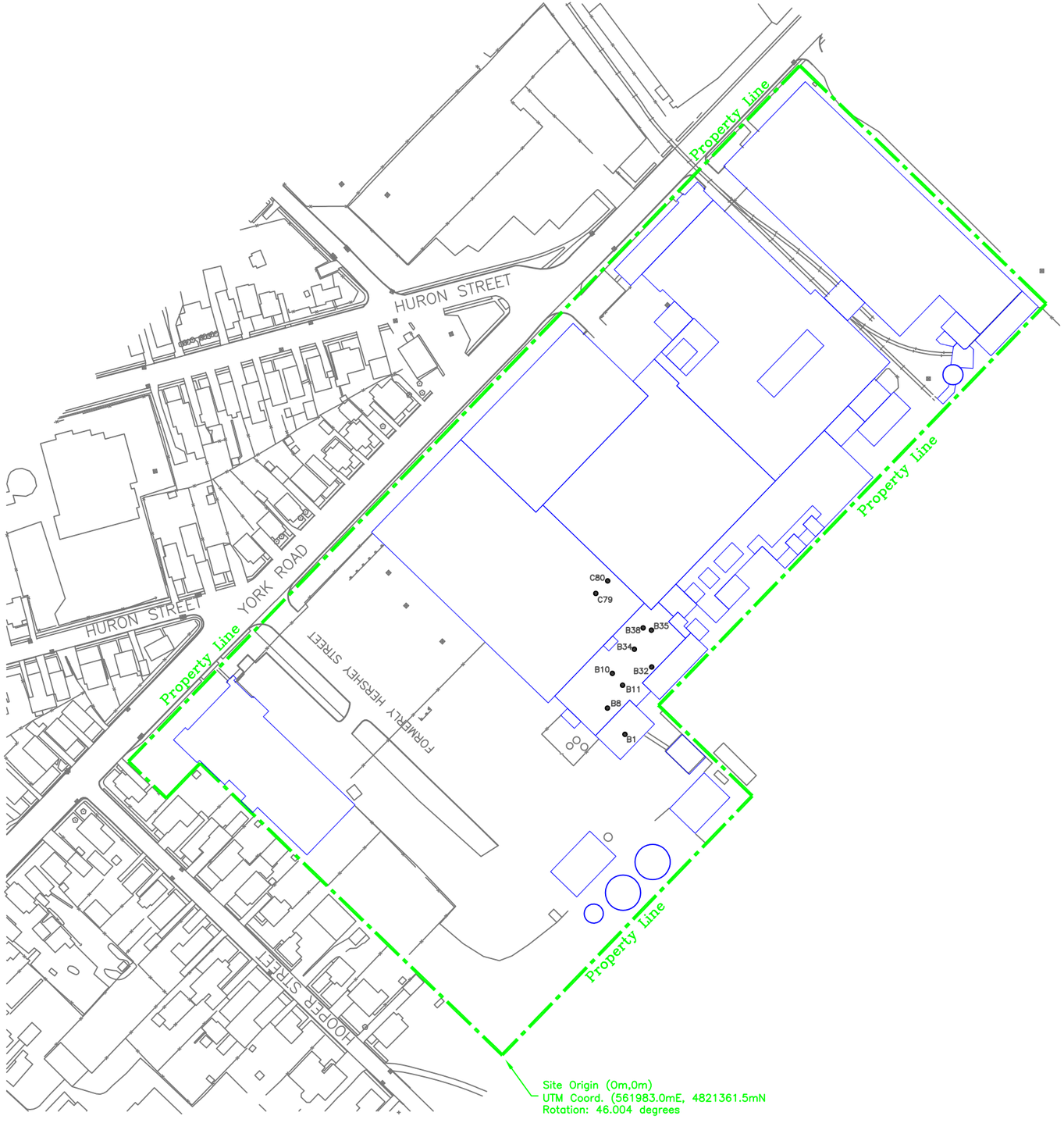
LEHDER PROJECT NUMBER: 144539AA	Guelph Glass plant Owens Corning Canada
DATE: March 2015	**Site Plan and Modeling Wind Centers**
LEHDER DRAWING NUMBER: B−154246	**(O.Reg. 346 Modeling Coordinates)**

0 25m 50m 75m 100m

SCALE: 1:1500 (1mm=1.5meter)

W:\DRAWINGS\154246.dwg



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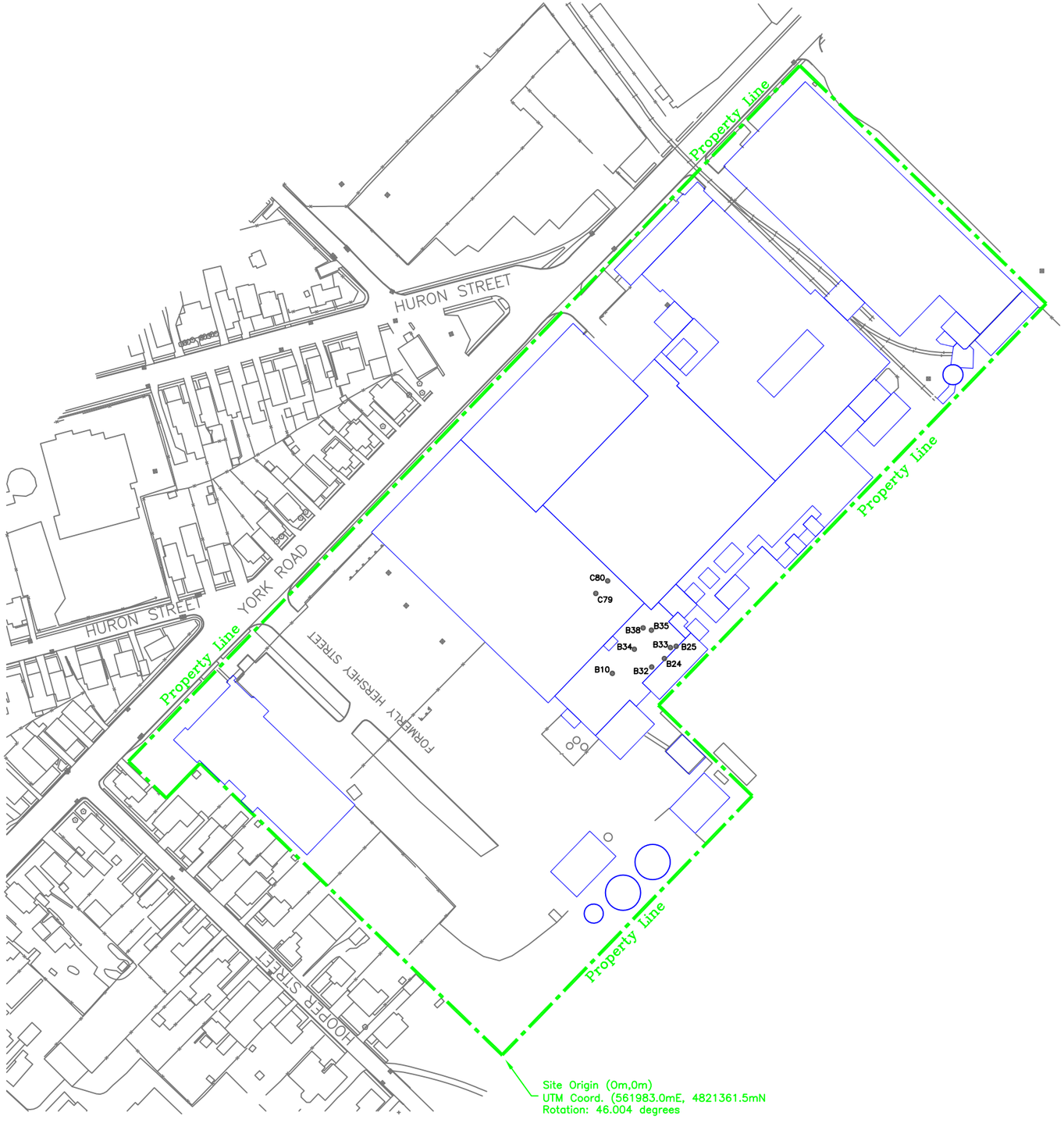
LEHDER PROJECT NUMBER: 144539AA	Guelph Glass Plant Owens Corning Canada
DATE: March 2015	
LEHDER DRAWING NUMBER: B-154247	**Site Plan with Current Hexavalent Chromium Sources**

40m 20m 0 50m 100m

SCALE: 1:2000 (1mm=2meter)

W:\DRAWINGS\154247.dwg



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LEHDER PROJECT NUMBER: 144539AA	Guelph Glass Plant Owens Corning Canada
DATE: March 2015	**Site Plan with** **Future Hexavalent Chromium Sources**
LEHDER DRAWING NUMBER: B-154248	

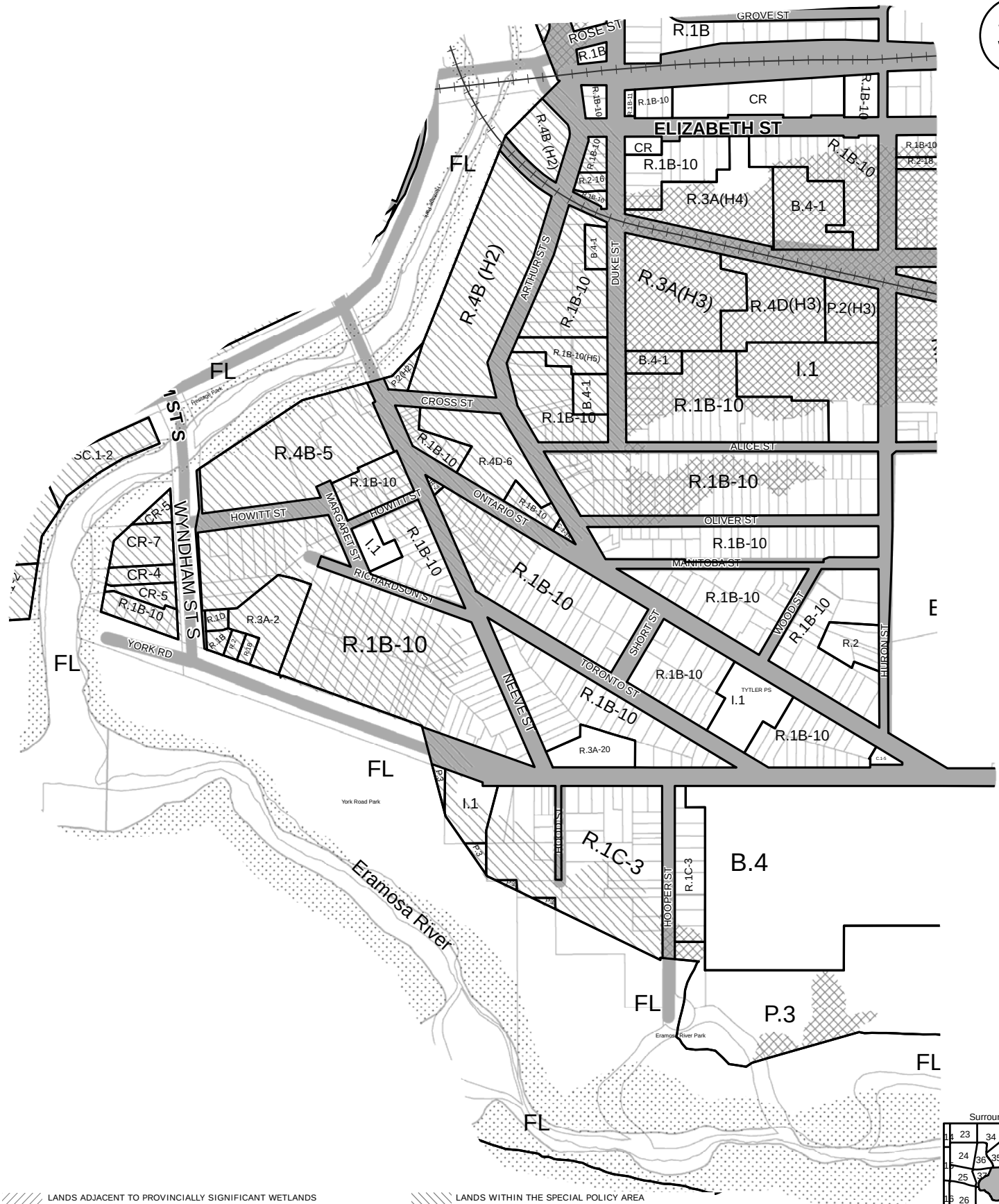
40m 20m 0 50m 100m

SCALE: 1:2000 (1mm=2meter)

W:\DRAWINGS\154248.dwg

DEFINED AREA
MAP NO.

38



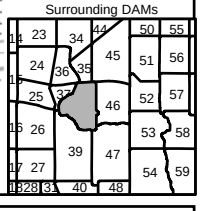
LANDS ADJACENT TO PROVINCIALLY SIGNIFICANT WETLANDS (See Section 13.3)

LANDS WITHIN THE SPECIAL POLICY AREA (See Section 12.4)

LANDS WITH ONE OF THE FOLLOWING: LOCALLY SIGNIFICANT WETLANDS, SIGNIFICANT WOODLOTS, NATURAL CORRIDOR, OR LINKAGE (See Section 13.4)

LANDS WITHIN THE FLOOD FRINGE (See Section 12.3)

Surrounding DAMs



100 50 0 100 M

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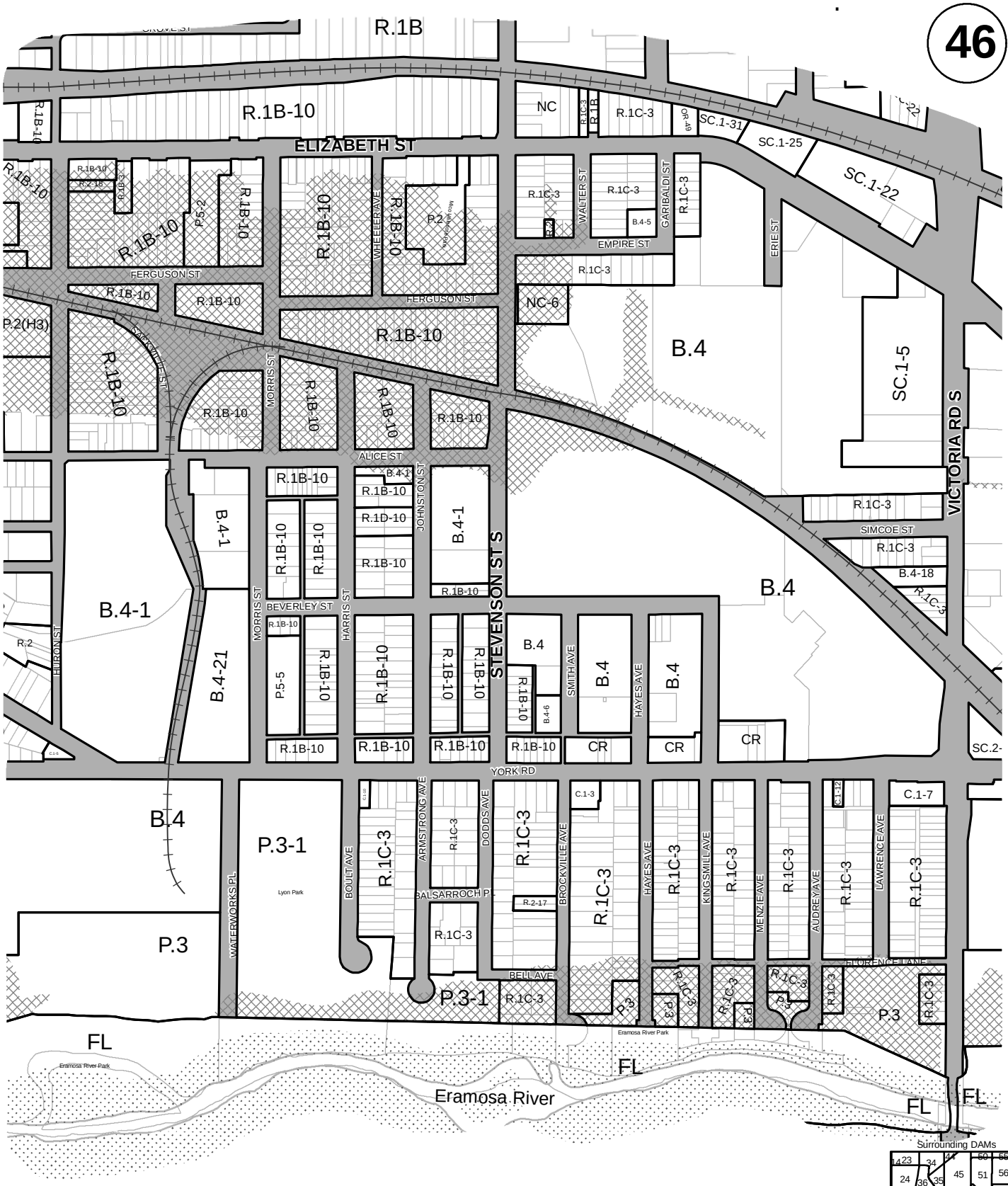
As last amended by By-law (2010) - 19063

SCHEDULE 'A'

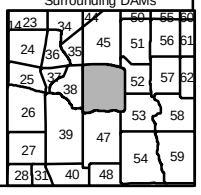
CITY OF Guelph
Making a Difference

DEFINED AREA
MAP NO.

46



Surrounding DAMs



LANDS ADJACENT TO PROVINCIALLY SIGNIFICANT WETLANDS (See Section 13.3)

LANDS WITHIN THE SPECIAL POLICY AREA (See Section 12.4)

LANDS WITH ONE OF THE FOLLOWING: LOCALLY SIGNIFICANT WETLANDS, SIGNIFICANT WOODLOTS, NATURAL CORRIDOR, OR LINKAGE (See Section 13.4)

LANDS WITHIN THE FLOOD FRINGE (See Section 12.3)

100 50 0 100 M

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Appendix C Source Inventory

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Source Inventory in UTM Coordinates
Current Sources of Hexavalent Chromium

Source ID	Status	Description	UTM Easting	UTM Northing	Volumetric Flowrate (m3/s)	Stack Diameter (m)	Temp (deg C)	Ht Above Roof (m)	Ht Above Grade (mag)	SourceType
B01	Current	107 Furnace Stack (West)	562035.67	4821499.11	5.280	0.58	324	4.60	32.00	Process Exhaust
B08	Current	General Exhaust Above Furnace	562028.15	4821510.37	14.710	1.22	49	5.40	14.45	General Ventilation
B10	Current	General Exhaust Above T107B F/H	562030.25	4821525.28	14.610	1.24	49	5.40	14.45	General Ventilation
B11	Current	107B Forehearth Stack	562034.66	4821520.18	2.290	0.68	128	2.30	15.09	Process Exhaust
B32	Current	General Exhaust Above T106	562047.16	4821528.02	23.170	1.24	49	5.50	14.48	General Ventilation
B34	Current	General Exhaust Above T107A F/H	562039.70	4821535.65	23.170	1.24	49	5.50	14.48	General Ventilation
B35	Current	General Exhaust Above CFM Main Channel	562047.03	4821543.82	23.170	1.24	49	5.50	14.48	General Ventilation
B38	Current	105 Forehearth Stack	562043.48	4821544.79	2.400	0.75	106	3.70	16.46	Process Exhaust
C79	Current	General Exhaust West CFM F/H	562023.15	4821559.58	15.000	1.41	38	8.30	11.64	General Ventilation
C80	Current	General Exhaust East CFM F/H	562028.25	4821564.97	15.000	1.41	38	8.30	11.64	General Ventilation

Source Inventory in UTM Coordinates
Future Sources of Hexavalent Chromium

Source ID	Status	Description	UTM Easting	UTM Northing	Volumetric Flowrate (m3/s)	Stack Diameter (m)	Temp (deg C)	Ht Above Roof (m)	Ht Above Grade (mag)	SourceType
B08	Current	General Exhaust Above Furnace	562028.15	4821510.37	14.71	1.22	49	5.40	14.45	General Ventilation
B10	Current	General Exhaust Above T107B F/H	562030.25	4821525.28	14.61	1.24	49	5.40	14.45	General Ventilation
B24	Future	105 Furnace Stack (West)	562052.59	4821531.65	1.28	0.33	324	18.63	31.43	Process Exhaust
B25	Future	105 Furnace Stack (East)	562057.67	4821536.90	1.28	0.33	324	18.63	31.43	Process Exhaust
B32	Current	General Exhaust Above T106	562047.16	4821528.02	23.17	1.24	49	5.50	14.48	General Ventilation
B33	Future	Gen Exhaust Above T105 furnace	562055.21	4821536.35	14.71	0.79	49	7.20	20.00	General Ventilation (future)
B34	Current	General Exhaust Above T107A F/H	562039.70	4821535.65	23.17	1.24	49	5.50	14.48	General Ventilation
B35	Current	General Exhaust Above CFM Main Channel	562047.03	4821543.82	23.17	1.24	49	5.50	14.48	General Ventilation
B38	Future	105 Forehearth Stack	562043.48	4821544.79	2.40	0.75	106	15.20	28.00	Process Exhaust
C79	Current	General Exhaust West CFM F/H	562023.15	4821559.58	15.00	1.41	38	8.30	11.64	General Ventilation
C80	Current	General Exhaust East CFM F/H	562028.25	4821564.97	15.00	1.41	38	8.30	11.64	General Ventilation

* sources marked current in this table will remain in the future scenario without any changes to the exhaust stacks.

Site Name: Owens Corning

Site Location: Guelph Glass Plant

Source Summary Table A - Source Inventory Table

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
999	Comfort Heat Total				x				Combustion - Comfort Heating / Cooling
A01	Cold Room Exhaust	198.4	83.0	23.600	0.5 x 0.5		0.3	13.1	General Ventilation
A02	OUT OF SERVICE (Diesel Room Roof Exhaust)	199.8	78.3	23.600	0.5 x 0.5		0.3	13.1	Out of Service
A03	OUT OF SERVICE (Fresh Air Intake)	199.1	75.0		1.0 x 0.4		0.6	13.4	Out of Service
A04	OUT OF SERVICE (Process Water Room Roof Exhaust)	201.5	70.6		0.9 x 0.9		0.9	13.7	Out of Service
A05	OUT OF SERVICE (Process Water Room Roof Exhaust)	203.2	64.5		0.8 x 0.8		0.3	13.1	Out of Service
A06	Cooling Tower #1	209.9	80.8	1000.000	3.4 x		5.5	18.3	Wet Cooling Tower
A07	Cooling Tower #2	217.2	80.8	1000.000	3.4 x		5.5	18.3	Wet Cooling Tower
A08	OUT OF SERVICE (Cooling Tower #3)	224.5	80.8	1000.000	3.4 x		5.5	18.3	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
A09	Cooling Water Breathing Pipe #1	209.9	74.5		0.1 **x**		1.6	14.4	Miscellaneous (lunch room, plumbing vents, etc.)
A10	Cooling Water Breathing Pipe #2	217.2	74.5		0.1 **x**		1.6	14.4	Miscellaneous (lunch room, plumbing vents, etc.)
A11	Cooling Water Breathing Pipe #3	224.5	74.5		0.1 **x**		1.6	14.4	Miscellaneous (lunch room, plumbing vents, etc.)
A12	Pre-Mix Level Exhaust #1	209.9	85.5	23.600	0.4 **x**	27	6.1	18.9	Process Exhaust
A13	Pre-Mix Level Exhaust #2	230.6	80.9	23.600	0.4 **x**	28	6.1	18.9	Process Exhaust
A14	Air Make-up - Pre-Mix Level	233.6	80.3		1.2 **x** 1.2		2.3	15.1	Intake
A15	Air Make-up - Mix and Circ. Levels	233.8	77.4		1.7 **x** 1.4		4.6	17.4	Intake
A16	OUT OF SERVICE (104 Furnace Hall Exhaust #1)	245.7	77.8	23.600	1.8 **x**		2.0	14.8	Out of Service
A17	OUT OF SERVICE (104 Furnace Hall Exhaust #2)	245.7	74.1	23.600	1.8 **x**		2.0	14.8	Out of Service
A18	OUT OF SERVICE (104 Furnace Hall Exhaust #3)	245.7	70.5	23.600	1.8 **x**		2.0	14.8	Out of Service
A19	OUT OF SERVICE (104 Forehearth Stack)	247.2	78.4	0.500	0.4 **x**	450	2.9	15.7	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
A20	OUT OF SERVICE (104 Furnace Dust Collector Ex.)	246.0	64.5	0.330	0.1 **x**		0.9	23.2	Out of Service
A21	OUT OF SERVICE (104 Furnace Stack)	246.6	63.3	1.500	0.8 **x**	690	5.3	27.6	Out of Service
A22	OUT OF SERVICE (104 Spill Air Relief)	245.7	61.8		0.3 **x**		2.0	24.2	Out of Service
A23	OUT OF SERVICE (103 Furnace Hall Exhaust #1)	255.5	77.8	23.600	1.8 **x**		2.0	24.3	Out of Service
A24	OUT OF SERVICE (103 Furnace Hall Exhaust #2)	255.5	74.1	23.600	1.8 **x**		2.0	24.3	Out of Service
A25	OUT OF SERVICE (103 Furnace Hall Exhaust #3)	255.5	70.5	23.600	1.8 **x**		2.0	24.3	Out of Service
A26	OUT OF SERVICE (103 Forehearth Stack)	257.0	78.4	0.500	0.4 **x**	450	2.7	25.0	Out of Service
A27	OUT OF SERVICE (103 Furnace Dust Collector Ex.)	256.4	64.5	0.330	0.1 **x**	20	1.2	23.5	Out of Service
A28	OUT OF SERVICE (103 Furnace Stack)	257.0	63.3	1.500	0.8 **x**	690	5.3	27.6	Out of Service
A29	OUT OF SERVICE (103 Spill Air Relief)	256.1	61.8		0.3 **x**		2.0	24.2	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
A30	OUT OF SERVICE (I/T #3 For A/C Rotospray)	260.8	78.7		1.7 x 2.3		1.5	14.3	Out of Service
A31	OUT OF SERVICE (I/T #4 For A/C Rotosproy)	263.6	78.8		1.2 x 1.2		1.8	14.6	Out of Service
A32	OUT OF SERVICE (102 Furnace Hall Roof Exhaust)	267.8	73.7		2.1 x 6.0		0.9	13.7	Out of Service
A33	OUT OF SERVICE (102 Forehearth Stack)	269.9	80.0	0.500	0.4 x	450	2.7	15.5	Out of Service
A34	OUT OF SERVICE (102 Furnace Stack)	267.4	63.5	1.500	0.8 x	690	14.8	27.6	Out of Service
A35	OUT OF SERVICE (102 Spill Air Relief)	267.4	62.0		0.2 x		5.8	18.6	Out of Service
A36	OUT OF SERVICE (101 Furnace Hall Roof Exhaust)	276.7	74.2		2.1 x 6.0		0.9	13.7	Out of Service
A37	OUT OF SERVICE (101 Forehearth Stack)	278.7	80.0	0.500	0.4 x	459	2.7	15.5	Out of Service
A38	OUT OF SERVICE (101 Furnace Stack)	276.3	63.5	1.600	0.8 x	740	14.8	27.6	Out of Service
A39	OUT OF SERVICE (101 Spill Air Relief)	276.3	62.0		0.2 x		5.8	18.6	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
A40	OUT OF SERVICE (AR-l Scrap Tunnel Exhaust)	287.5	74.8	23.900	1.5 **x**		4.0	16.8	Out of Service
A41	OUT OF SERVICE (102 Furnace Dust Collector Ex.)	283.4	64.1	0.330	0.2 **x**	20	9.4	22.3	Out of Service
A42	OUT OF SERVICE (101 Furnace Dust Collector Ex.)	283.4	62.6	0.330	0.2 **x**	20	9.4	22.3	Out of Service
A43	OUT OF SERVICE (AR-2 Scrap Tunnel Exhaust)	241.2	85.0	23.900	1.2 **x**		3.8	16.6	Out of Service
A44	OUT OF SERVICE (104 Process Water Breathing Pipe)	243.8	87.4		0.2 **x**		1.6	14.4	Out of Service
A45	OUT OF SERVICE (103 Process Water Breathing Pipe)	260.5	87.5		0.2 **x**		1.6	14.4	Out of Service
A46	OUT OF SERVICE (102 Process Water Breathing Pipe)	263.6	87.5		0.2 **x**		1.6	14.4	Out of Service
A47	OUT OF SERVICE (101 Process Water Breathing Pipe)	275.2	87.5		0.2 **x**		1.6	14.4	Out of Service
A48	OUT OF SERVICE (Combustion Air Intake)	247.3	57.5		0.8 **x**			3.5	Out of Service
A49	OUT OF SERVICE (Combustion Air Intake)	254.3	57.5		0.8 **x**			3.5	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
A50	OUT OF SERVICE (Air Intake)	266.5	57.5		1.0 **x** 1.0			3.5	Out of Service
A51	OUT OF SERVICE (Air Intake)	267.0	57.5		1.0 **x** 1.0			2.0	Out of Service
A52	OUT OF SERVICE (Combustion Air Intake)	271.8	57.5		0.8 **x**			3.5	Out of Service
A53	OUT OF SERVICE (Electrical Room Exhaust)	279.6	57.5		0.3 **x** 0.2			2.0	Out of Service
A54	OUT OF SERVICE (Combustion Air Intake)	283.0	57.5		0.8 **x**			3.5	Out of Service
A55	AC Unit	303.6	73.3		**x**			4.6	HVAC (non combustion)
A56	HVAC Unit, Eng. Office	301.3	81.7		**x**			9.1	Combustion - Comfort Heating / Cooling
A57	OUT OF SERVICE (Nat.Gas Heater, Binder Rm. Overhead Door)	230.9	71.8		0.2 **x**			6.1	Out of Service
A58	Cooling Tower #4	202.0	80.8		7.9 **x** 6.4	25	5.5	18.3	Wet Cooling Tower
A59	Parts Cleaning Exhaust	290.6	75.3		**x**				General Ventilation
B01	107 Furnace Stack (West)	135.6	57.7	5.280	0.8 **x**	324	4.6	32.0	Process Exhaust

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
B02	OUT OF SERVICE (107 Furnace Stack (East))	140.9	57.3	2.100	0.8 **x**	640	4.6	32.0	Out of Service
B03	107 Spill Air Exhaust (West)	135.4	60.4		0.2 **x**		2.3	29.8	Relief Valve
B04	OUT OF SERVICE (107 Spill Air Exhaust (East))	140.9	60.4		0.2 **x**		2.3	29.8	Out of Service
B05	107 Dust Collector Ex. (West)	132.6	66.2	0.330	0.2 **x**	20	10.8	23.6	Process Exhaust
B06	107 Dust Collector Ex. (East)	143.9	66.2	0.330	0.2 **x**	20	10.8	23.6	Process Exhaust
B07	107C Process Water Vent	134.5	77.0		0.2 **x**		2.3	15.1	Relief Valve
B08	General Exhaust Above Furnace			14.710	1.2 **x**	49	5.4	14.5	General Ventilation
B09	Gen Exhaust Above T107C F/H			23.610	4.0 **x**	40	5.4	18.3	Out of Service
B10	General Exhaust Above T107B F/H			14.710	1.2 **x**	49	5.4	14.5	General Ventilation
B11	107B Forehearth Stack	150.1	73.0	2.290	0.7 **x**	128	2.3	15.1	Process Exhaust
B12	REMOVED (107C Forehearth Stack)	138.4	82.5	0.500	0.5 **x**	450	3.3	16.0	Removed

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
B13	Forming Vent. In-Take (capped)	142.4	86.5		1.8 **x** 1.8		2.1	14.9	Out of Service
B14	Forming Vent. In-Take (capped)	145.4	86.5		1.8 **x** 1.8		2.1	14.9	Out of Service
B15	107C Forming Scrap Tunnel Exhaust	128.4	89.2	19.200	1.2 **x** 1.5	27	2.1	14.9	Process Exhaust
B16	107B Forming Scrap Tunnel Exhaust	156.5	89.0	19.200	1.2 **x** 1.5	27	2.1	14.9	Process Exhaust
B17	107A Process Water Vent	156.5	80.8		0.2 **x**		2.1	14.9	Relief Valve
B18	OUT OF SERVICE (107 Forehearth Relief Pipe #1)	153.6	61.7		0.3 **x**			9.1	Out of Service
B19	OUT OF SERVICE (107 Forehearth Relief Pipe #2)	154.5	61.7		0.3 **x**			9.1	Out of Service
B20	OUT OF SERVICE (107 Forehearth Relief Pipe #3)	155.5	61.7		0.3 **x**			9.1	Out of Service
B21	REMOVED (Winder Panel Spray Booth Ex.)	156.7	61.4		0.5 **x**		2.4	12.8	Removed
B22	OUT OF SERVICE (106 Furnace Stack (West))	161.2	62.2		0.5 **x**		4.0	27.8	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
B23	OUT OF SERVICE (106 Furnace Stack (East))	163.4	62.2		0.5 **x**		4.0	27.8	Out of Service
B24	105 Furnace Stack (West)	170.8	68.1	1.300	0.5 **x**	300	4.0	27.8	Process Exhaust
B25	105 Furnace Stack (East)	178.1	68.1	1.300	0.5 **x**	300	4.0	27.8	Process Exhaust
B26	OUT OF SERVICE (106 Spill Air Exhoust (East))	161.2	63.7		0.2 **x**		2.4	26.2	Out of Service
B27	OUT OF SERVICE (106 Spill Air Exhaust (West))	163.4	63.7		0.2 **x**		2.4	26.2	Out of Service
B28	REMOVED (105 Spill Air Exhaust (East))	173.4	63.7		0.2 **x**		2.5	26.3	Removed
B29	REMOVED (105 Spill Air Exhaust (West))	175.9	63.7		0.2 **x**		2.5	26.3	Removed
B30	OUT OF SERVICE (106 Dust Collector Exhaust)	164.6	67.6	0.330	0.2 **x** 0.2	20	10.8	23.6	Out of Service
B31	OUT OF SERVICE (105 Dust Collector Exhaust)	175.3	67.6	0.330	0.2 **x** 0.2	20	10.8	23.6	Out of Service
B32	General Exhaust Above T106			23.320	1.2 **x**	49	5.5	14.5	General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
B33	OUT OF SERVICE (Gen Exhaust Above T105)	176.0	69.5	23.610	4.1 **x**	40	5.5	18.3	Out of Service
B34	General Exhaust Above T107A F/H			23.320	1.2 **x**	49	5.5	14.5	General Ventilation
B35	General Exhaust Above CFM Main Channel			23.320	1.2 **x**	49	5.5	14.5	General Ventilation
B36	OUT OF SERVICE (105 Process Water Vent)	170.2	79.2		0.2 **x**		2.3	15.1	Out of Service
B37	OUT OF SERVICE (107A Forehearth Stack)	163.5	83.8	0.500	0.5 **x**	450	2.4	15.2	Out of Service
B38	105 Forehearth Stack	173.9	83.8	2.400	0.8 **x**	106	3.7	16.5	Process Exhaust
B39	107A Forminq Scrap Tunnel Exhaust	165.2	89.0	14.000	0.9 **x** 1.1	27	2.1	14.9	Process Exhaust
B40	OUT OF SERVICE (105 Forming Scrap Tunnel Exhaust)	170.9	83.9	16.500	0.6 **x** 0.5	25	3.7	16.5	Out of Service
B41	OUT OF SERVICE (105 Forehearth Blow-off)	174.9	91.4		0.2 **x**		5.5	14.6	Out of Service
B42	OUT OF SERVICE (106 Forehearth Blow-off)	177.0	91.4		0.2 **x**		5.5	14.6	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
B43	Bathroom Plumbing Vent	148.5	91.3		0.1 **x**		4.9	14.1	Miscellaneous (lunch room, plumbing vents, etc.)
B44	Bathroom Exhaust	147.6	91.3		0.2 **x**		1.0	10.2	Miscellaneous (lunch room, plumbing vents, etc.)
B45	Roof Drain Pipe	187.2	85.5		0.1 **x**				Miscellaneous (lunch room, plumbing vents, etc.)
B46	Nat.Gas Safety Relief Pipe	186.9	84.3		0.1 **x**				Relief Valve
B47	Diesel Room Roof Exhaust #1	191.6	84.9		1.1 **x** 1.1		1.2	7.6	General Ventilation
B48	Diesel Combustion Air Intake #1	192.7	84.9		0.4 **x**		1.2	7.6	Intake
B49	OUT OF SERVICE (Diesel Generator Exhaust #1)	196.2	84.7		0.5 **x**		8.8	15.2	Out of Service
B50	Diesel Combustion Air Intake #2	196.2	83.5		0.4 **x**		1.3	7.7	Intake
B51	Diesel Generator Exhaust #1,2&3	196.2	81.7		0.6 **x**		11.7	14.5	Combustion - Emergency Equipment
B52	Tunnel Vent	196.2	80.5		0.5 **x**		1.8	8.2	General Ventilation
B53	OUT OF SERVICE (Diesel Generator Exhaust #3)	196.2	79.4		0.5 **x**		8.8	15.2	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
B54	OUT OF SERVICE (Diesel Combustion Air Intake #3)	196.2	78.3		0.4 **x**		1.2	7.6	Out of Service
B55	Diesel Room Roof Exhaust #2	194.3	76.8		1.1 **x** 1.1		1.2	7.6	General Ventilation
B56	OUT OF SERVICE (High Pressure Steam Heater Ex.)	192.8	75.1		0.4 **x**		1.4	7.8	Out of Service
B57	Intake for Wind Cooling	150.2	62.3		9.0 **x** 2.0			5.0	Intake
B58	Intake for Combustion Blowers	149.2	62.3		9.0 **x** 2.0			8.0	Intake
B59	OUT OF SERVICE (Intake for Combustion Blowers)	159.0	57.3		0.8 **x**			3.5	Out of Service
B60	OUT OF SERVICE (Intake for Combustion Blowers)	173.8	57.3		0.6 **x** 0.6			3.5	Out of Service
B61	OUT OF SERVICE (Intake for Combustion Blowers)	178.1	57.3		0.8 **x**			3.5	Out of Service
B62	REMOVED (Nat.Gas Space Heater Exhaust)	170.0	67.1		0.2 **x**		0.9	5.5	Removed
B63	REMOVED (Nat.Gas Space Heater Exhaust)	170.1	57.2		0.2 **x**		0.9	5.5	Removed

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C01	REMOVED (Intake for Charge oF Drying Oven)				0.7 **x**		0.6	8.8	Removed
C02	REMOVED (No.5 Oven Exhaust (West))	205.8	99.1		0.4 **x**		2.3	10.6	Removed
C03	REMOVED (No.5 Oven Exhaust (East))	218.0	98.5		0.4 **x**		2.3	10.6	Removed
C04	REMOVED (No.5 Oven Exit Hood)	227.7	98.8		0.6 **x**		3.0	11.2	Removed
C05	REMOVED (No.6 Oven Exhaust (West))	206.1	101.6		0.4 **x**		2.4	10.6	Removed
C06	REMOVED (No.6 Oven Exhaust (East))	218.0	101.6		0.4 **x**		2.4	10.6	Removed
C07	REMOVED (No.6 Oven Exit Hood)	227.7	101.4		0.6 **x**		2.8	11.1	Removed
C08	REMOVED (No.7 Oven Burner)	211.8	102.5		0.6 **x**	140	2.7	11.0	Removed
C09	REMOVED (No.7 Oven,Lanes 5&6 Exhaust)	211.6	105.5		0.5 **x**	140	3.1	11.3	Removed
C10	REMOVED (Roof Exhaust)	221.3	101.9	3.780	0.9 **x**	25	1.2	9.4	Removed
C100	CFM Forming Tunnel	169.8	95.8	6.000	0.4 **x**	25	4.0	13.2	Process Exhaust

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C101	CFM Forming Tunnel	178.4	96.1	6.000	0.4 x	25	4.0	13.2	Process Exhaust
C102	Room Ventilation CFM end of line 1 of 2	172.3	178.3		x				General Ventilation
C102-2	P&F Oven Area Roof Exhaust	160.9	104.4		x				General Ventilation
C103	Room Ventilation - CFM End of Line 2 of 2	190.1	178.9		x				General Ventilation
C104	A/C Unit	145.6	105.7		x				Intake
C104A	Wall Louvers North CFM oven area	179.5	166.8		x				General Ventilation
C104B	Wall Louvers North CFM oven area	179.5	161.9		x				General Ventilation
C104C	Wall Louvers North CFM Area	179.5	155.7		x				General Ventilation
C105	Roof Exhaust P&F Ovens Area	145.2	137.7		x				General Ventilation
C106	Air Inlet - P&F Ovens Area	161.2	122.1		x				Intake
C107	Air Inlet - P&F Oven Area	145.7	122.4		x				Intake

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C108	Natural Gas Heater Exhaust	161.4	149.1		x				Combustion - Comfort Heating / Cooling
C109	Natural Gas Heater Exhaust	194.3	149.3		x				Combustion - Comfort Heating / Cooling
C11	REMOVED (No.8 Oven, Lane 7 Exhaust)	203.4	106.2		0.3 x	140	2.8	11.0	Removed
C110	Natural Gas Heater Exhaust	161.0	132.7		x				Combustion - Comfort Heating / Cooling
C111	CSM Creel HVAC Unit #2	237.1	114.5		x				Intake
C12	REMOVED (No.8 Oven, Lane 7 Burner)	206.4	106.2		0.3 x	140	3.2	11.4	Removed
C13	REMOVED (No.8 Oven, Lane 8 Exhaust)	203.1	108.0		0.3 x	140	2.8	11.0	Removed
C14	REMOVED (No.9 Oven,Lane 9 Exhaust)	203.1	110.1		0.6 x	140	3.5	11.7	Removed
C15	REMOVED (No.8 Oven, Lane 8 Burner)	215.9	107.4		0.3 x	140	3.2	11.4	Removed
C16	REMOVED (Roof Exhaust)	221.3	108.9	3.780	0.9 x		1.2	9.4	Removed
C17	REMOVED (No.9 Oven,Lane 9 Burner)-	217.4	114.4		0.2 x	140	1.8	10.0	Removed

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C18	REMOVED (No.7 Oven Exit Hood)	227.7	105.4		0.7 **x**	140	3.0	11.3	Removed
C19	REMOVED (No.8 Oven Exit Hood)	227.7	107.8		0.6 **x**	140	3.7	11.9	Removed
C20	REMOVED (No.9 Oven Exit Hood)	227.7	111.2		0.9 **x**	140	3.3	11.6	Removed
C21	REMOVED (No.10 Oven, Lane 11 Exhaust)	203.1	113.3		0.3 **x** 0.4	140	2.7	11.0	Removed
C22	REMOVED (No.10 Oven, Lane 12 Exhaust)	203.2	115.1		0.3 **x** 0.4	140	2.7	11.0	Removed
C23	REMOVED (No.10 Oven, Lane 11 Burner)	207.0	112.7		0.2 **x** 0.2	140	3.1	11.3	Removed
C24	REMOVED (No.10 Oven, Lane 12 Burner)	217.4	114.4		0.2 **x** 0.2	140	3.1	11.3	Removed
C25	REMOVED (No.10 Oven Exit Hood)	227.7	113.9		1.0 **x**	140	3.4	11.7	Removed
C26	OUT OF SERVICE (No.11 Oven, Lane 13 Exhaust)	198.8	115.5		0.4 **x**	140	2.0	10.2	Out of Service
C27	OUT OF SERVICE (No.11 Oven, Lane 14 Exhaust)	198.5	118.8		0.4 **x**	140	1.9	10.1	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C28	OUT OF SERVICE (No.11 Oven, Lane 13 Burner)	204.9	118.5		0.3 x	140	2.1	10.4	Out of Service
C29	OUT OF SERVICE (No.11 Oven, Lane 14 Burner)	216.8	118.3		0.3 x	140	2.0	10.2	Out of Service
C30	OUT OF SERVICE (No.11 Oven Exit Hood)	225.3	117.4		0.7 x	140	2.6	10.9	Out of Service
C31	OUT OF SERVICE (Locker Room HVAC Unit)	192.7	89.9		x			8.2	Out of Service
C32	QC Muffle Oven	210.7	90.4		0.5 x 0.5		0.2	8.5	Process Exhaust
C33	OUT OF SERVICE (Hot Water Heater Exhaust)	210.4	92.1		0.3 x		0.4	8.6	Out of Service
C34	Washroom Exhaust	218.7	91.9		0.9 x 0.9		0.3	8.5	Miscellaneous (lunch room, plumbing vents, etc.)
C35	OUT OF SERVICE (Hood Ex. For Re-conditioning Rm)	225.4	95.6		0.2 x 0.4		1.1	9.4	Out of Service
C36	OUT OF SERVICE (A-Wing Forehearth Blow-OFF (top))	234.2	87.5		0.2 x		2.2	10.5	Out of Service
C37	OUT OF SERVICE (A-Wing Forehearth Blow-OFF (mid))	234.2	87.5		0.2 x		1.9	10.1	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C38	OUT OF SERVICE (A-Wing Forehearth Blow-OFF (btm))	234.9	87.6		0.2 **x**		1.1	9.4	Out of Service
C39	OUT OF SERVICE (Condensate Vent for Boiler)	239.2	95.5		0.1 **x**		1.4	9.6	Out of Service
C40	Roof Exhaust for Lunch Room	244.0	92.1		0.7 **x** 0.5		0.4	8.6	Miscellaneous (lunch room, plumbing vents, etc.)
C41	Lunch Room A/C Unit	246.4	88.7		**x**				HVAC (non combustion)
C42	Forming Supervisor's A/C Unit	250.0	92.0		**x**				HVAC (non combustion)
C43	Mat Line PRD Air Intake	201.6	141.7		0.9 **x**		1.3	9.5	Intake
C44	OUT OF SERVICE (Fresh Air Intake West of Roll-up)	187.6	136.0		0.5 **x**		1.0	9.2	Out of Service
C45	OUT OF SERVICE (Ambient Mat Line Control Exhaust)	197.3	137.1	9.330	1.2 **x**		2.7	11.0	Out of Service
C46	Roof Stairwell	221.0	135.5		0.8 **x** 2.4		0.2	8.4	General Ventilation
C47	Q/C Checker Hood Exhaust	198.5	130.4		0.4 **x**		2.4	10.6	Process Exhaust
C48	Mat Line Oven Charge Stack	220.4	142.9	3.880	0.4 **x**	37	3.3	11.6	Process Exhaust

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C49	Mat Line Main Oven Stack	214.6	143.8	5.390	0.7 **x**	208	6.3	14.5	Process Exhaust
C50	Mat Line Oven Discharge Stack	206.7	142.6	2.380	0.4 **x**	175	3.0	11.2	Process Exhaust
C51	Mat Line PRD Stack	206.7	135.0	9.440	0.7 **x**		4.2	12.4	Process Exhaust
C52	Roof Exhaust	211.6	141.4	3.780	1.3 **x**		1.5	9.7	General Ventilation
C53	Roof Exhaust	214.6	137.1	3.780	0.9 **x**		1.2	9.5	General Ventilation
C54	Roof Exhaust	224.4	135.9	13.900	1.3 **x**		1.5	9.7	General Ventilation
C55	Mat Line Elect. Control Rm. A/C	221.0	130.3		**x**				HVAC (non combustion)
C56	Creel Rm. A/C Unit	237.6	135.4		**x**				HVAC (non combustion)
C57	Scrubber Room Roof Exhaust	245.1	137.4		0.9 **x**		1.3	9.5	General Ventilation
C58	OUT OF SERVICE (Milled Fibre Exhaust)	252.4	156.9		0.9 **x**		1.2	9.4	Out of Service
C59	OUT OF SERVICE (Milled Fibre Process Exhaust)	249.1	161.2	1.420	0.3 **x**	25	0.9	9.1	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C60	Binder Circ. Tank Exhaust	220.7	89.4	0.980	0.5 x	28	14.6	22.8	Process Exhaust
C61	REMOVED (Curing Oven Roof Intake/Exhaust)	200.6	107.7	3.780	0.9 x		1.0	9.3	Removed
C62	Removed (connected to filter box)				x				Removed
C65	No. 12 Oven Burner Exhaust	148.9	124.3	0.320	0.2 x	140	1.8	11.0	Process Exhaust
C66	No. 13 Oven Burner Exhaust	145.8	124.3		0.2 x	140	1.8	11.0	Process Exhaust
C67	No. 14 Oven Burner Exhaust	142.8	124.3	0.320	0.2 x	140	1.8	11.0	Process Exhaust
C68	No. 15 Oven Burner Exhaust	164.8	124.3	0.320	0.2 x	140	1.8	11.0	Process Exhaust
C69	No. 16 Oven Burner Exhaust	161.8	124.3	0.320	0.2 x	140	1.8	11.0	Process Exhaust
C70	No. 17 Oven Burner Exhaust	158.8	124.3	0.320	0.2 x	140	1.8	11.0	Process Exhaust
C71	CSM Heat Sealer Ventilation Exhaust	194.0	134.8	0.660	0.3 x	25	1.8	11.0	Process Exhaust
C72	CFM Forming Tunnel	170.4	104.6	6.000	0.4 x	21	4.0	13.2	Process Exhaust

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C73	CFM Binder Cyclone	167.7	128.6	2.100	0.3 x	21	1.8	11.0	Process Exhaust
C75	CFM RTO - Oven	153.6	144.8	11.000	0.6 x	245	6.0	15.2	Process Exhaust
C76	REMOVED (CFM Cooling Section)			0.500	0.2 x	21	1.8	11.0	Removed
C77	CFM End-of-Line Checker Oven Exhaust	181.5	178.4	0.660	0.3 x	25	1.8	11.0	Process Exhaust
C79	General Exhaust West CFM F/H			15.010	1.4 x	38	8.3	11.6	General Ventilation
C80	General Exhaust East CFM F/H			15.010	1.4 x	38	8.3	11.6	General Ventilation
C81	Room Ventilation CFM Ovens	176.7	130.3		x	25			General Ventilation
C82	Room Ventilation CFM Ovens	176.7	136.5		x	25			General Ventilation
C83	Room Ventilation CFM Ovens	176.5	145.8		x	25			General Ventilation
C84	Room Ventilation CFM Ovens	176.4	152.3		x				General Ventilation
C85	Room Ventilation CFM Ovens	176.1	159.8		x				General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C86	Roof Exhauster	176.4	167.8		x				General Ventilation
C87	Room Ventilation CFM Electrical Substation	199.0	100.3		x				General Ventilation
C88	HVAC System	187.7	101.8		x				HVAC (non combustion)
C89	HVAC System	186.6	121.6		x				HVAC (non combustion)
C90	CFM Electrical Substation	199.1	95.7		x				Miscellaneous (lunch room, plumbing vents, etc.)
C91	CSM End-of-Line Ventilation System	195.2	130.4		x				General Ventilation
C92	CFM Combustion Air	167.9	92.6		x				Intake
C92-2	OUT OF SERVICE (Air Inlet - 105 Forehearth Area)	177.0	117.7		x				Out of Service
C93	CFM Combustion Air Intake	179.7	92.8		x				Intake
C94	CFM Cooling Section	188.7	91.4		x				Intake
C95	OUT OF SERVICE (CFM Combustion Air Forehearths)				x				Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
C96	West Oscillator Drive Room Supply Air	168.0	94.5		x				Intake
C97	CFM Binder Application Makeup Air				x				Intake
C98	CFM Edge Trim Makeup Air	172.5	172.7		x				Intake
C99	CFM Forming Tunnel	178.0	104.7	6.000	0.4 x	25	4.0	13.2	Process Exhaust
D01	OUT OF SERVICE (Drying Oven Exhaust)	279.1	100.2		0.5 x 0.5		0.7	5.2	Out of Service
D02	A/C Unit No.1O	289.7	101.1		x				HVAC (non combustion)
D03	A/C Unit No.11	274.0	118.7		x				HVAC (non combustion)
D04	A/C Unit No.12	289.7	118.7		x				HVAC (non combustion)
D05	OUT OF SERVICE (Roof Exhaust - Packinq Area)	272.7	120.6		0.6 x 0.6		0.7	5.3	Out of Service
D06	OUT OF SERVICE (Roof Exhaust)	261.8	121.9		0.8 x 0.8		0.8	5.3	Out of Service
D07	OUT OF SERVICE (Roof Exhaust)	261.8	136.3		0.2 x		0.8	5.4	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
D08	OUT OF SERVICE (Roof Exhaust)	268.5	136.3		0.2 **x**		1.4	5.9	Out of Service
D09	OUT OF SERVICE (Roof Exhaust)	273.7	132.3		0.6 **x** 0.6		0.7	5.3	Out of Service
D10	OUT OF SERVICE (A/C Unit No.13)	289.7	131.8		**x**				Out of Service
D11	OUT OF SERVICE (A/C Unit No.14)	305.5	138.9		**x**				Out of Service
D12	OUT OF SERVICE (A/C Unit No.15)	305.8	147.3		**x**				Out of Service
D13	A/C Unit No.16	307.4	173.0		**x**				HVAC (non combustion)
D14	Alloy Shop Finishing Room Exhaust	285.2	172.0		0.7 **x**		0.4	4.9	General Ventilation
D15	A/C Unit for Data Processing Room	285.8	177.8		**x**				HVAC (non combustion)
D16	Fresh Air Intake	285.8	179.9		0.1 **x**		0.5	5.0	Intake
D17	REMOVED (Roof Exhaust)	290.7	187.0		0.2 **x**		0.8	5.3	Removed
D18	A/C Unit for Alloy Shop	293.3	184.9		**x**				HVAC (non combustion)

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
D19	REMOVED (Steam Space Heater Exhaust)	295.0	179.9		0.2 **x**		1.0	5.6	Removed
D20	REMOVED (Steam Space Heater Exhaust)	295.0	175.7		0.2 **x**		0.9	5.5	Removed
D21	HVAC Unit for Office	300.8	194.0		**x**			5.3	Combustion - Comfort Heating / Cooling
D22	HVAC Unit for Office	309.0	194.0		**x**			5.3	Combustion - Comfort Heating / Cooling
D23	Office Roof Exhaust	314.0	193.7		0.3 **x**		0.2	5.3	Miscellaneous (lunch room, plumbing vents, etc.)
D24	Washroom Exhaust	306.5	188.6		0.2 **x** 0.3		0.3	4.9	Miscellaneous (lunch room, plumbing vents, etc.)
D25	Washroom Exhaust	309.0	188.6		0.2 **x** 0.3		0.3	4.9	Miscellaneous (lunch room, plumbing vents, etc.)
D26	Plumbing Vent	321.5	188.2		0.1 **x**		0.8	5.4	Miscellaneous (lunch room, plumbing vents, etc.)
D27	A/C Unit for HR	323.3	186.5		**x**				HVAC (non combustion)
D28	A/C Unit for First Aid Room	317.0	183.3		**x**				HVAC (non combustion)
D29	Plumbing Vent	324.6	181.2		0.1 **x**		0.7	5.2	Miscellaneous (lunch room, plumbing vents, etc.)

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
D30	Plumbing Vent	324.6	176.9		0.1 **x**		0.8	5.3	Miscellaneous (lunch room, plumbing vents, etc.)
D31	Plumbing Vent	324.6	175.4		0.1 **x**		0.8	5.4	Miscellaneous (lunch room, plumbing vents, etc.)
D32	A/C Unit for Lunch Room	321.3	174.4		0.1 **x**		0.8	5.4	HVAC (non combustion)
D33	REMOVED (Nat.Gas Space Heater Exhaust)	313.9	145.8		0.2 **x**		0.9	5.5	Removed
D34	Plumbing Vent	324.2	152.2		0.1 **x**		0.9	5.4	Miscellaneous (lunch room, plumbing vents, etc.)
D35	A/C Unit For Fitness Center	321.9	143.3		**x**				HVAC (non combustion)
D36	Drain Vent	321.5	135.7		0.1 **x**		0.6	5.2	Miscellaneous (lunch room, plumbing vents, etc.)
D37	Plumbing Vent	324.8	136.0		0.1 **x**		0.8	5.4	Miscellaneous (lunch room, plumbing vents, etc.)
D38	Washroom Exhaust	321.8	133.6		0.3 **x**		0.3	4.9	Miscellaneous (lunch room, plumbing vents, etc.)
D39	Lab Exhaust	321.5	124.1		0.2 **x** 0.3		0.8	5.4	General Ventilation
D40	A/C Unit for Lab	317.0	123.9		**x**				HVAC (non combustion)

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
D41	A/C Unit for Lab	317.1	118.7		x				HVAC (non combustion)
D42	Drain Vent	318.7	119.0		0.1 x		0.5	5.0	Miscellaneous (lunch room, plumbing vents, etc.)
D44	OUT OF SERVICE (Steam Vent)	323.0	106.5		0.1 x		1.9	6.5	Out of Service
D45	OUT OF SERVICE (Steam Vent)	324.8	106.5		0.1 x		1.9	6.5	Out of Service
D46	OUT OF SERVICE (Condensate Return Pipe)	327.2	104.9		0.1 x		0.4	4.9	Out of Service
D47	Sump Vent	328.5	104.9		0.1 x		0.8	5.4	Miscellaneous (lunch room, plumbing vents, etc.)
D48	OUT OF SERVICE (Boiler Stack)	320.9	105.4		x				Out of Service
D49	OUT OF SERVICE (Boiler Room Exhaust)	318.6	103.9		0.4 x 0.3		0.6	5.1	Out of Service
D50	OUT OF SERVICE (Compressor Room Roof Exhaust #1)	320.8	99.5		0.5 x 0.3		0.6	5.1	Out of Service
D51	Out of Service (Compressor Room Roof Exhaust #2)	326.7	100.1		0.5 x		0.7	5.2	Out of Service
D52	OUT OF SERVICE (Roof Exhaust Compressor Room)	326.3	88.6		0.9 x 0.9		0.8	5.4	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
D53	REMOVED (HVAC Unit)	267.7	87.7		x			4.6	Removed
D54	Eng. Conference Rm Exhaust	313.0	87.6		0.5 x 0.5		4.9	9.4	General Ventilation
D55	OUT OF SERVICE (101 Forehearth Relief Pipe #1)	287.8	87.6		0.2 x		2.3	6.9	Out of Service
D56	OUT OF SERVICE (101 Forehearth Relief Pipe #2)	286.9	87.6		0.2 x		2.3	6.9	Out of Service
D57	OUT OF SERVICE (101 Forehearth Relief Pipe #3)	286.1	87.6		0.2 x		2.3	6.9	Out of Service
D58	Inactive Source				0.1 x		0.4	5.0	Out of Service
D59	OUT OF SERVICE (Edge Trim Process Roof Exhaust)	287.6	143.3		0.9 x 0.9		0.9	11.6	Out of Service
D60	OUT OF SERVICE (Edge Trim Process Roof Exhaust)	285.7	158.6		0.9 x 0.9		0.9	11.6	Out of Service
D61	REMOVED (Edge Trim Process Roof Exhaust)	270.6	149.9		0.9 x 0.9		0.9	14.3	Removed
D62	REMOVED (Edge Trim Process Stack)			5.850	0.6 x		3.0	13.7	Removed

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
D63	Filter Box Louvre Exhaust	269.3	155.2		0.9 **x** 3.0		1.0	11.7	Process Exhaust
D64	Filter Box Louvre Exhaust	269.3	146.7		0.9 **x** 3.0		1.0	11.7	Process Exhaust
D65	High-Efficiency Furnace	271.7	142.8		0.1 **x**			10.7	Combustion - Comfort Heating / Cooling
D66	OUT OF SERVICE (Roving AC Roof Top Unit#1)	275.2	101.2		**x**				Out of Service
D67	OUT OF SERVICE (Roving AC Roof Top Unit #2)	279.1	95.7		**x**				Out of Service
D68	Roving Gas Heater Exhaust #1	296.1	118.7		**x**				HVAC (non combustion)
D69	Roving Gas Heater Exhaust #2	260.4	118.7		**x**				HVAC (non combustion)
D70	SPC Room/Safety Office HVAC	296.2	87.5		**x**				HVAC (non combustion)
E01	Vent Pipe	179.0	152.6		0.1 **x**		2.3	9.6	Relief Valve
E02	Champion Heater,Warehouse	196.7	181.3		0.9 **x** 0.9		0.9	8.2	Combustion - Comfort Heating / Cooling
E03	Champion Heater,Warehouse	200.6	181.6		0.6 **x** 1.1		0.9	8.2	Intake

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
E04	OUT OF SERVICE (30 Ton A/C Unit - Packing Area)	213.6	165.5		x				Out of Service
E05	REMOVED (Roving Oven Burner Exhaust)	218.3	176.4		0.2 x		2.0	9.3	Removed
E06	REMOVED (Roving Oven Forced Exhaust (through E07))	219.8	178.5		1.0 x		1.5	8.8	Removed
E07	REMOVED (Roving Oven Hood Exhaust)	219.8	182.5		0.3 x		1.6	8.9	Removed
E08	Nat.Gas Heater Exhaust	215.9	192.2		0.3 x		0.4	7.7	Combustion - Comfort Heating / Cooling
E09	Nat.Gas Heater Ex. (inactive)	224.4	191.8		0.2 x		1.4	8.7	Out of Service
E10	Nat.Gas Heater Ex. (inactive)	230.8	189.9		0.2 x		0.4	7.7	Out of Service
E11	Roof Exhaust for Washroom	238.4	189.9		0.3 x 0.4		0.6	7.9	Miscellaneous (lunch room, plumbing vents, etc.)
E12	OUT OF SERVICE (Nat.Gas Heater Ex.)	242.4	185.4		0.2 x		1.3	8.6	Out of Service
E13	Roof Exhaust - Roving Area	233.8	177.4		0.8 x		0.6	8.0	General Ventilation
E14	REMOVED (30 Ton A/C Unit - Roving Room)	237.4	167.8		x				Removed

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
E15	OUT OF SERVICE (Gas Heater Exhaust)	234.4	167.4		0.2 **x**		2.2	9.5	Out of Service
E16	REMOVED (Roof Exhaust)	230.6	157.1		0.9 **x** 0.9		0.8	8.1	Removed
E17	REMOVED (Fresh Air Intake Creel Room)	237.8	156.5		0.6 **x** 0.8		0.5	7.8	Removed
F01	OUT OF SERVICE (Nat.Gas Space Heater Exhaust)	127.1	135.8		0.2 **x**		1.4	10.5	Out of Service
F02	OUT OF SERVICE (Nat.Gas Space Heater Exhaust)	127.1	143.5		0.2 **x**		1.4	10.5	Out of Service
F03	Nat.Gas Space Heater Exhaust	127.1	150.5		0.2 **x**		1.6	10.7	Combustion - Comfort Heating / Cooling
F04	Nat.Gas Space Heater Exhaust	127.2	157.5		0.2 **x**		1.4	10.5	Combustion - Comfort Heating / Cooling
F05	Champion Heater	138.9	140.6		0.3 **x**		1.4	10.5	Combustion - Comfort Heating / Cooling
F06	Champion Heater Intake	135.6	143.8		0.6 **x** 1.2		0.7	9.9	Intake
F07	Champion Heater Exhaust	136.8	162.6		0.3 **x**		2.0	11.2	Combustion - Comfort Heating / Cooling
F08	Champion Heater Exhaust	135.9	179.1		0.9 **x**		1.0	10.2	HVAC (non combustion)

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
F09	Warehouse Roof Exhaust, New	160.3	139.2	21.900	1.5 **x**		2.4	9.1	HVAC (non combustion)
F10	Warehouse Roof Exhaust, New	160.6	111.1	21.900	1.5 **x**		2.4	9.1	HVAC (non combustion)
F11	Warehouse Radiant Heaters,Inside				**x**				Combustion - Comfort Heating / Cooling
F12	OUT OF SERVICE (105 Rotospray Inlet)	169.0	91.9		**x**				Out of Service
F13	OUT OF SERVICE (Power and Free Area)	158.6	92.4	9.330	**x**		1.5	9.1	Out of Service
F14	QA Muffle Oven Exhaust	155.2	93.5	0.180	0.2 **x**		0.3	15.2	Process Exhaust
G01	Lunch Room Exhaust	342.4	161.6		0.2 **x**		0.3	6.7	Miscellaneous (lunch room, plumbing vents, etc.)
G02	OUT OF SERVICE (Nat.Gas Space Heater Exhaust)	346.1	159.1		0.2 **x**		0.2	6.6	Out of Service
G03	Nat.Gas Space Heater Exhaust	348.5	164.0	0.010	0.3 **x**		0.8	7.2	Combustion - Comfort Heating / Cooling
G04	Nat.Gas Space Heater Exhaust	351.3	157.6	0.060	0.3 **x**		1.6	8.1	Combustion - Comfort Heating / Cooling
G05	OUT OF SERVICE (Nat.Gas Space Heater Exhaust)	351.3	151.8		0.2 **x**		1.0	7.4	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
G06	OUT OF SERVICE (Nat.Gas Space Heater Exhaust)	363.3	179.3		0.3 **x**		0.8	7.2	Out of Service
G07	OUT OF SERVICE (Roof Exhaust)	377.4	187.3		0.6 **x** 0.6		0.8	7.2	Out of Service
G08	Heater Exhaust	376.3	189.1		**x**				HVAC (non combustion)
G09	OUT OF SERVICE (Exhauster)	387.1	193.6		**x**				Out of Service
G10	REMOVED (Exhauster)	381.8	156.7		**x**				Removed
G11	Roof Exhauster	385.1	153.7		**x**				General Ventilation
G12	REMOVED (T/C Line Oven Exhaust)	380.8	146.9		0.8 **x**		2.5	8.9	Removed
G13	NGF Tire Cord Line #1 RTO	376.9	138.4	12.000	0.9 **x**	585	12.3	17.7	Process Exhaust
G14	REMOVED (T/C Oven Exhaust)	379.3	136.0		0.8 **x**		2.1	8.5	Removed
G15	OUT OF SERVICE (Roof Exhaust)	383.6	136.0		0.8 **x**		1.0	7.4	Out of Service
G16	T/C Line Roof Exhaust	383.6	132.9		0.8 **x**		0.9	7.3	General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
G17	REMOVED (Washroom Exhaust)	342.4	130.5		0.4 **x** 0.3		0.6	7.0	Removed
G18	OUT OF SERVICE (Blower Exhaust - Flint Unloading)	341.7	117.6		1.7 **x** 1.7		2.5	8.9	Out of Service
G19	A/C Unit	354.9	117.9		**x**				HVAC (non combustion)
G20	Muffle Furnace Lab Exhaust	342.3	92.9		0.2 **x**		0.8	7.2	Process Exhaust
G21	REMOVED (Roof Exhaust)	354.6	97.5		0.3 **x**		0.8	7.2	Removed
G22	Storage Room Exhaust	356.6	92.1		0.3 **x** 0.2		0.4	6.8	General Ventilation
G23	Fresh Air Make-Up Unit	369.3	121.7		1.7 **x** 1.7		2.5	8.9	Intake
G24	Roof Exhaust (inactive)	371.7	115.6		0.6 **x** 0.6		0.7	7.1	Out of Service
G25	OUT OF SERVICE (Nat.Gas Space Heater Exhaust)	376.9	104.6	0.040	0.2 **x**		1.2	7.6	Out of Service
G26	Nat.Gas Space Heater Exhaust	374.4	98.2	0.040	0.2 **x**		1.5	7.9	Combustion - Comfort Heating / Cooling
G27	Roof Exhaust (inactive)	373.8	92.7		0.6 **x**		0.6	7.0	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
G28	Nat.Gas Space Heater Exhaust	371.1	78.7		0.2 **x**		0.8	7.2	Out of Service
G29	Nat.Gas Space Heater Exhaust	378.4	80.5	0.040	0.2 **x**		1.3	7.7	Combustion - Comfort Heating / Cooling
G30	Minor Ingredients Blower Inlet	376.0	78.7		0.3 **x**		0.9	7.3	Intake
G31	Welding Fume Exhaust	373.2	76.2		0.1 **x**		1.0	7.4	Maintenance Welding Exhaust
G32	OUT OF SERVICE (Zinc Oxide D/C Exhaust)	372.6	74.1	0.330	0.1 **x**	15	0.6	7.0	Out of Service
G33	Batch Transfer Blower Intake #1	365.2	74.3		0.3 **x**		2.1	8.5	Intake
G34	Batch Transfer Blower Intake #2	365.2	73.6		0.3 **x**		2.0	8.4	Intake
G35	Batch Transfer Blower Exhaust #1	365.2	73.0	0.330	0.1 **x**	15	1.2	7.6	Process Exhaust
G36	Batch Transfer Blower Exhaust #2	365.2	72.4	0.330	0.1 **x**	15	0.9	7.3	Process Exhaust
G37	Batch Transfer Blower Intake #3	365.2	71.4		0.3 **x**		1.9	8.3	Intake
G38	Batch Transfer Blower Exhaust #3	365.2	70.9	0.330	0.1 **x**	15	2.1	8.5	Process Exhaust

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
G39	Batch House D/C Exhaust	365.2	69.9	0.330	0.2 **x** 0.3	15		35.7	Process Exhaust
G40	Batch House D/C Exhaust	365.2	75.3	0.330	0.2 **x** 0.3	15		35.7	Process Exhaust
G43	Mixing Room Roof Exhaust	384.2	62.2		0.8 **x** 0.8		0.9	10.0	General Ventilation
G44	OUT OF SERVICE (Roof Exhaust)	362.5	65.9		0.5 **x** 0.4		0.6	9.7	Out of Service
G45	Batch House D/C Exhaust, Mixed Batch Silo	359.9	66.9	0.240	0.2 **x** 0.3	15		35.7	Process Exhaust
G46	Bad Batch D/C Exhaust #1	354.5	71.6	1.320	0.3 **x** 0.3	15		12.2	Process Exhaust
G47	Bad Batch D/C Exhaust #2	344.3	68.3	0.330	0.2 **x**	15		5.8	Process Exhaust
G48	Batch Ingredient Dust Collector	353.5	70.4	0.330	0.1 **x**	15		31.4	Process Exhaust
G49	Batch Ingredient Dust Collector	346.6	64.4	0.330	0.1 **x**	15		31.4	Process Exhaust
G50	Batch Ingredient Dust Collector (Silos 5, 10, 11)	345.6	61.9	0.330	0.1 **x**	15		31.4	Process Exhaust
G51	Batch Ingredient Dust Collector	343.9	63.2	0.330	0.1 **x**	15		31.4	Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
G52	Batch Ingredient Dust Collector	342.6	61.9	0.330	0.1 **x**	15		31.4	Process Exhaust
G53	Nat.Gas Space Heater Exhaust	346.1	134.8	0.010	0.2 **x**		1.5		Combustion - Comfort Heating / Cooling
G54	Ammonium Hydroxide Tote Vent	379.0	56.8		0.0 **x**				Storage Tank
G55	Roof Mounted Heat/Cool Unit	359.5	183.0	0.040	**x**			7.9	Combustion - Comfort Heating / Cooling
G56	Nat.Gas Space Heater Exhaust	354.1	106.2	0.040	0.2 **x**		1.5	7.9	Combustion - Comfort Heating / Cooling
G57	Nat.Gas Space Heater Exhaust	359.1	104.5	0.030	0.1 **x**		1.5	7.9	Combustion - Comfort Heating / Cooling
G58	Nat.Gas Space Heater Exhaust	375.2	67.4	0.040	0.2 **x**		1.5	7.9	Combustion - Comfort Heating / Cooling
G59	Nat.Gas Space Heater Exhaust	379.6	67.4	0.030	0.1 **x**		1.5	7.9	Combustion - Comfort Heating / Cooling
G60	Roof Mounted Heat/Cool Unit	343.1	138.3	0.020	**x**			7.9	Combustion - Comfort Heating / Cooling
G61	Batch Ingredient D/C Exhaust (Silo #18)	356.1	76.2	0.240	0.1 **x**	15		21.6	Process Exhaust
G62	Batch Ingredient D/C Exhaust (Silo #19)	356.1	74.7	0.240	0.1 **x**	15		21.6	Process Exhaust

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
G63	Batch Ingredient D/C Exhaust (Silo #20)	356.1	73.2	0.240	0.1 **x**	15		21.6	Process Exhaust
G64	Batch Ingredient D/C Exhaust (Silo #21)	356.1	71.8	0.240	0.1 **x**	15		21.6	Process Exhaust
G65	Batch Ingredient Dust Collector	356.0	92.0	0.430	0.1 **x**			35.7	Process Exhaust
G66	Batch Ingredient Transfer Blower #4 Intake	343.0	59.2		0.1 **x**			4.9	Out of Service
G67	Batch Ingredient Transfer Blower #4 Exhaust	341.8	58.9	0.330	0.1 **x**			4.9	Out of Service
G68	Batch Ingredient D/C Exhaust (Silo # 1, 3, 9)	343.6	65.9	0.330	0.3 **x** 0.3			31.4	Process Exhaust
G69	Blender Transporter Dust Collector	352.4	70.3	1.320	0.3 **x** 0.3			12.0	Out of Service
G70	Batch Ingredient Transfer Blower #5 Intake	340.9	58.3		0.2 **x**			3.0	Intake
G71	AC unit	365.0	179.1		**x**				HVAC (non combustion)
G72	Gas Space Heater	340.4	106.2		**x**				Combustion - Comfort Heating / Cooling
G73	Roof top AC Unit - QC Lab	352.0	95.2		**x**				HVAC (non combustion)

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
H01	MBR Building Roof Exhaust	131.5	14.1	1.910	0.6 **x**		1.2	7.3	General Ventilation
H02	MBR Building Roof Exhaust	141.2	14.7	1.910	0.6 **x**		1.2	7.3	General Ventilation
H03	OUT OF SERVICE (Nat.Gas Heater Exhaust)	143.5	17.0		0.2 **x**		1.2	7.3	Out of Service
H04	Heater Air Intake	148.0	18.4		0.3 **x**			4.5	Intake
H05	Wall Louvre	142.0	6.4		0.5 **x** 0.5			0.5	General Ventilation
H06	Wall Louvre	129.2	6.4		0.5 **x** 0.5			0.5	General Ventilation
H07	OUT OF SERVICE (Heater Air Intake)	133.6	5.8		0.3 **x**			3.4	Out of Service
H08	OUT OF SERVICE (Nat.Gas Heater Exhaust)	135.7	5.7		0.2 **x**			4.6	Out of Service
H09	OUT OF SERVICE (Gas Relief Pipe)	137.3	5.7		0.1 **x**			3.2	Out of Service
H10	Aeration Blower Vent	126.0	9.5		**x**				Out of Service
H11	Zeeweed Blower Inlet	136.3	6.4		**x**				Out of Service

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
I1	CFM Line #2 Forming Tunnel (Proposed)			6.000	0.4 **x**	21	4.0	13.2	Process Exhaust
I2	CFM Line #2 Forming Tunnel (proposed)			6.000	0.4 **x**	25	4.0	13.2	Process Exhaust
I3	CFM Line #2 Forming Tunnel (proposed)				**x**				Process Exhaust
I4	CFM Line #2 Forming Tunnel (proposed)				**x**				Process Exhaust
I5	CFM Line #2 Binder Cyclone (proposed)				**x**				Process Exhaust
I6	CFM Line #2 RTO-Oven (proposed)				**x**				Process Exhaust
I7	CFM Line #2 End-of-line Exhaust (proposed)				**x**				Process Exhaust
I8	105 2nd Forehearth Stack (proposed for CFM Line#2)				**x**				Process Exhaust
V01	107 Bay Top West Wall Louvre	127.2	88.7		26.0 **x** 0.7			11.0	General Ventilation
V02	107 Bay Lower West Wall Louvre	127.2	87.0		7.0 **x** 0.7			5.0	General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
V03	Wall Vent	127.2	83.8		0.6 **x** 0.6			2.0	General Ventilation
V04	107 Bay Lower West Wall Louvre	127.2	67.9		6.4 **x** 0.7			5.0	General Ventilation
V05	107 Bay West Wall Louvre (Top)	127.2	62.4		13.7 **x** 0.7			25.0	General Ventilation
V06	107 Bay West Wall Louvre (2nd)	127.2	62.4		7.0 **x** 0.7			13.0	General Ventilation
V07	107 Bay West Wall Louvre (3rd)	127.2	62.4		7.0 **x** 0.7			12.0	General Ventilation
V08	107 Bay West Wall Louvre (Bottom)	127.2	62.4		7.0 **x** 0.7			5.0	General Ventilation
V09	107 Bay South Wall Louvre (Top)	130.2	51.2		20.0 **x** 0.7			25.0	General Ventilation
V10	107 Bay South Wall Louvre (2nd)	130.2	51.2		20.0 **x** 0.7			13.0	General Ventilation
V11	107 Bay South Wall Louvre (3rd)	130.2	51.2		20.0 **x** 0.7			12.0	General Ventilation
V12	107 Bay South Wall Louvre (Bottom)	130.2	51.2		20.0 **x** 0.7			5.0	General Ventilation
V13	107 Bay East Wall Louvre (Top)	148.1	52.3		13.7 **x** 0.7			25.0	General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
V14	107 Bay East Wall Louvre (2nd)	148.1	52.3		10.7 **x** 0.7			13.0	General Ventilation
V15	107 Bay East Wall Louvre (3rd)	148.1	52.3		10.7 **x** 0.7			12.0	General Ventilation
V16	107 Bay East Wall Louvre (Bottom)	148.1	52.3		10.7 **x** 0.7			5.0	General Ventilation
V17	B-Wing West Wall Louvre (Top)	157.6	57.8		8.4 **x** 0.7			22.0	General Ventilation
V18	B-Wing West Wall Louvre (2nd)	157.6	57.8		8.4 **x** 0.7			13.0	General Ventilation
V19	B-Wing West Wall Louvre (3rd)	157.6	57.8		3.7 **x** 0.7			12.0	General Ventilation
V20	B-Wing West Wall Louvre (Bottom)	157.6	57.8		3.7 **x** 0.7			5.0	General Ventilation
V21	B-Wing South Wall Louvre (Top)	184.4	57.3		28.0 **x** 0.7			22.0	General Ventilation
V22	B-Wing South Wall Louvre (2nd)	184.4	57.3		28.0 **x** 0.7			13.0	General Ventilation
V23	B-Wing South Wall Louvre (3rd)	184.4	57.3		28.0 **x** 0.7			12.0	General Ventilation
V24	B-Wing South Wall Louvre (Bottom)	184.4	57.3		28.0 **x** 0.7			5.0	General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
V25	B-Wing East Wall Louvre (Top)	186.7	58.8		8.4 **x** 0.7			22.0	General Ventilation
V26	B-Wing East Wall Louvre (2nd)	186.7	58.8		8.4 **x** 0.7			13.0	General Ventilation
V27	B-Wing East Wall Louvre (3rd)	186.7	58.8		12.2 **x** 0.7			12.0	General Ventilation
V28	B-Wing East Wall Louvre (Bottom)	186.7	58.8		12.2 **x** 0.7			5.0	General Ventilation
V29	Wall Vent	186.6	68.2		**x**				General Ventilation
V30	B-Wing North Wall Louvre (Top)	180.8	67.1		28.0 **x** 0.7			22.0	General Ventilation
V31	B-Wing North Wall Louvre (2nd)	180.8	67.1		24.0 **x** 0.7			11.0	General Ventilation
V32	B-Wing North Wall Louvre (3rd)	159.8	67.1		1.2 **x** 1.2			16.0	General Ventilation
V33	107 Bay North Wall Louvre (Top)	146.3	65.8		20.0 **x** 0.7			25.0	General Ventilation
V34	107 Bay North Wall Louvre (Bottom)	146.3	65.9		20.0 **x** 0.7			13.0	General Ventilation
V35	B Wing Forehearth Wall Vent	136.7	90.4		28.0 **x** 0.7			10.0	General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
V36	Access Door	162.7	90.9		0.9 **x** 0.7			9.0	General Ventilation
V37	B-Wing Forehearth Wall Vent	165.0	91.1		2.4 **x** 1.4			9.0	General Ventilation
V38	B-Wing Forehearth Wall Vent	171.3	90.3		17.0 **x** 0.7			10.0	General Ventilation
V39	B-Wing Forehearth Wall Vent	173.0	90.3		2.4 **x** 1.4			9.0	General Ventilation
V40	B-Wing Forehearth Wall Vent	181.9	88.6		1.6 **x** 1.3			9.0	General Ventilation
V41	B-Wing Wall Vent	186.5	78.4		0.7 **x** 0.7			7.0	General Ventilation
V42	Deisel Room Wall Vent	192.5	73.9		1.5 **x** 0.6			5.0	General Ventilation
V43	Wall Vent	162.4	57.3		1.2 **x** 0.6			3.5	General Ventilation
V44	Wall Vent	164.3	57.3		2.4 **x** 0.6			3.5	General Ventilation
V45	Wall Vent	201.9	87.0		**x**				General Ventilation
V46	Wall Vent	205.9	87.0		**x**				General Ventilation

Source ID	Description	Plant X	Plant Y	Volumetric Flowrate (m3/s)	Stack Dimensions __x__m	Temp. (C)	Height Above Roof (m)	Height Above Grade (m)	Source Type
V47	Wall Vent	247.9	87.0		x				General Ventilation
V48	Wall Vent	254.3	87.0		x				General Ventilation
V49	Wall Vent	262.0	86.9		x				General Ventilation
V50	Wall Vent	272.8	87.0		x				General Ventilation
V51	Wall Vent	277.3	87.0		x				General Ventilation
V52	Wall Vent	239.0	57.5		1.3 x 0.4			3.5	General Ventilation
V53	Wall Vent	244.9	57.5		1.3 x 0.4			3.5	General Ventilation
V54	Wall Vent	256.7	57.4		1.3 x 0.4			3.5	General Ventilation

Appendix D Emission Inventories

LEHDER

Half Hour Emission Inventory

Site Name: Owens Corning

Site Location: Guelph Glass Plant

Averaging Period: 30 Minute

Source Summary Table B - Emission Inventory Table

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
318	ACETIC ACID	64-19-7						
			A12	Pre-Mix Level Exhaust #1	3.377E-02	EC	Average	6.33
			A13	Pre-Mix Level Exhaust #2	3.377E-02	EC	Average	6.33
			B15	107C Forming Scrap Tunnel Exhaust	6.754E-02	EC	Average	12.65
			B16	107B Forming Scrap Tunnel Exhaust	6.754E-02	EC	Average	12.65
			B40	OUT OF SERVICE (105 Forming Scrap Tunnel Exhaust)	6.754E-02	EC	Average	12.65
			C100	CFM Forming Tunnel	1.059E-02	EC	Average	1.98
			C101	CFM Forming Tunnel	1.059E-02	EC	Average	1.98
			C60	Binder Circ. Tank Exhaust	3.377E-02	EC	Average	6.33
			C65	No. 12 Oven Burner Exhaust	3.205E-02	EC	Average	6.00
			C67	No. 14 Oven Burner Exhaust	3.205E-02	EC	Average	6.00
			C68	No. 15 Oven Burner Exhaust	3.205E-02	EC	Average	6.00

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			C69	No. 16 Oven Burner Exhaust	3.205E-02	EC	Average	6.00
			C70	No. 17 Oven Burner Exhaust	3.205E-02	EC	Average	6.00
			C72	CFM Forming Tunnel	1.059E-02	EC	Average	1.98
			C73	CFM Binder Cyclone	2.648E-02	EC	Average	4.96
			C75	CFM RTO - Oven	7.944E-04	EC	Average	0.15
			C99	CFM Forming Tunnel	1.059E-02	EC	Average	1.98
				Scenario Total	**5.339E-01**			**100**
7	CARBON MONOXIDE	630-08-0						
			B01	107 Furnace Stack (West)	5.800E-02	SM	Doc	100.00
				Scenario Total	**5.800E-02**			**100**
368	Chromium Compounds (Di-,Tri-,metallic)	7440-47-3						
			B01	107 Furnace Stack (West)	2.492E-04	EC	Average	36.80
			B11	107B Forehearth Stack	5.781E-05			8.54
			B38	105 Forehearth Stack	3.701E-04			54.66
				Scenario Total	**6.771E-04**			**100**
3554	Dibromoacetonitrile	3252-43-5						
			A12	Pre-Mix Level Exhaust #1	8.070E-05	EC	Average	10.52

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			A13	Pre-Mix Level Exhaust #2	8.070E-05	EC	Average	10.52
			B15	107C Forming Scrap Tunnel Exhaust	8.070E-05	EC	Average	10.52
			B16	107B Forming Scrap Tunnel Exhaust	8.070E-05	EC	Average	10.52
			B40	OUT OF SERVICE (105 Forming Scrap Tunnel Exhaust)	8.070E-05	EC	Average	10.52
			C100	CFM Forming Tunnel	1.342E-05	EC	Average	1.75
			C101	CFM Forming Tunnel	1.342E-05	EC	Average	1.75
			C60	Binder Circ. Tank Exhaust	8.070E-05	EC	Average	10.52
			C65	No. 12 Oven Burner Exhaust	3.946E-05	EC	Average	5.15
			C67	No. 14 Oven Burner Exhaust	3.946E-05	EC	Average	5.15
			C68	No. 15 Oven Burner Exhaust	3.946E-05	EC	Average	5.15
			C69	No. 16 Oven Burner Exhaust	3.946E-05	EC	Average	5.15
			C70	No. 17 Oven Burner Exhaust	3.946E-05	EC	Average	5.15
			C72	CFM Forming Tunnel	1.342E-05	EC	Average	1.75
			C73	CFM Binder Cyclone	3.068E-05	EC	Average	4.00
			C75	CFM RTO - Oven	9.204E-07	EC	Average	0.12
			C99	CFM Forming Tunnel	1.342E-05	EC	Average	1.75

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
				Scenario Total	**7.668E-04**			**100**
316	ETHANOL (ETHYL ALCOHOL)	64-17-5						
			A12	Pre-Mix Level Exhaust #1	3.149E-02	EC	Average	6.33
			A13	Pre-Mix Level Exhaust #2	3.149E-02	EC	Average	6.33
			B15	107C Forming Scrap Tunnel Exhaust	6.298E-02	EC	Average	12.65
			B16	107B Forming Scrap Tunnel Exhaust	6.298E-02	EC	Average	12.65
			B40	OUT OF SERVICE (105 Forming Scrap Tunnel Exhaust)	6.298E-02	EC	Average	12.65
			C100	CFM Forming Tunnel	9.876E-03	EC	Average	1.98
			C101	CFM Forming Tunnel	9.876E-03	EC	Average	1.98
			C60	Binder Circ. Tank Exhaust	3.149E-02	EC	Average	6.33
			C65	No. 12 Oven Burner Exhaust	2.989E-02	EC	Average	6.00
			C67	No. 14 Oven Burner Exhaust	2.989E-02	EC	Average	6.00
			C68	No. 15 Oven Burner Exhaust	2.989E-02	EC	Average	6.00
			C69	No. 16 Oven Burner Exhaust	2.989E-02	EC	Average	6.00
			C70	No. 17 Oven Burner Exhaust	2.989E-02	EC	Average	6.00
			C72	CFM Forming Tunnel	9.876E-03	EC	Average	1.98

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			C73	CFM Binder Cyclone	2.469E-02	EC	Average	4.96
			C75	CFM RTO - Oven	7.407E-04	EC	Average	0.15
			C99	CFM Forming Tunnel	9.876E-03	EC	Average	1.98
				Scenario Total	**4.978E-01**			**100**
421	HYDROGEN CHLORIDE	7647-01-0						
			B01	107 Furnace Stack (West)	1.040E-02	SM	C	100.00
				Scenario Total	**1.040E-02**			**100**
423	HYDROGEN FLUORIDE - GASEOUS-GROWING SEASON GS	7664-39-3						
			B01	107 Furnace Stack (West)	1.733E-02	SM	C	100.00
				Scenario Total	**1.733E-02**			**100**
329	METHANOL (METHYL ALCOHOL, WOOD ALCOHOL)	67-56-1						
			A12	Pre-Mix Level Exhaust #1	3.414E-02	EC	Average	6.33
			A13	Pre-Mix Level Exhaust #2	3.414E-02	EC	Average	6.33
			B15	107C Forming Scrap Tunnel Exhaust	6.827E-02	EC	Average	12.65
			B16	107B Forming Scrap Tunnel Exhaust	6.827E-02	EC	Average	12.65
			B40	OUT OF SERVICE (105 Forming Scrap Tunnel Exhaust)	6.827E-02	EC	Average	12.65
			C100	CFM Forming Tunnel	1.071E-02	EC	Average	1.98

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			C101	CFM Forming Tunnel	1.071E-02	EC	Average	1.98
			C60	Binder Circ. Tank Exhaust	3.414E-02	EC	Average	6.33
			C65	No. 12 Oven Burner Exhaust	3.240E-02	EC	Average	6.00
			C67	No. 14 Oven Burner Exhaust	3.240E-02	EC	Average	6.00
			C68	No. 15 Oven Burner Exhaust	3.240E-02	EC	Average	6.00
			C69	No. 16 Oven Burner Exhaust	3.240E-02	EC	Average	6.00
			C70	No. 17 Oven Burner Exhaust	3.240E-02	EC	Average	6.00
			C72	CFM Forming Tunnel	1.071E-02	EC	Average	1.98
			C73	CFM Binder Cyclone	2.677E-02	EC	Average	4.96
			C75	CFM RTO - Oven	8.030E-04	EC	Average	0.15
			C99	CFM Forming Tunnel	1.071E-02	EC	Average	1.98
				Scenario Total	**5.396E-01**			**100**
4	NITROGEN OXIDES (EXPRESSED AS NO2)	10102-44-0						
			999	Comfort Heat Total	1.643E-01	EF	Above Avg	4.81
			B01	107 Furnace Stack (West)	2.160E+00	EC	Average	63.27
			B11	107B Forehearth Stack	4.005E-02	EF	Above Avg	1.17

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			B38	105 Forehearth Stack	1.442E-01	EF	Above Avg	4.22
			C100	CFM Forming Tunnel	1.602E-02	EF	Above Avg	0.47
			C101	CFM Forming Tunnel	1.602E-02	EF	Above Avg	0.47
			C48	Mat Line Oven Charge Stack	1.286E-02	EF	Above Avg	0.38
			C49	Mat Line Main Oven Stack	1.113E-01	EF	Above Avg	3.26
			C50	Mat Line Oven Discharge Stack	1.286E-02	EF	Above Avg	0.38
			C65	No. 12 Oven Burner Exhaust	2.881E-02	EF	Above Avg	0.84
			C66	No. 13 Oven Burner Exhaust	2.881E-02	EF	Above Avg	0.84
			C67	No. 14 Oven Burner Exhaust	2.881E-02	EF	Above Avg	0.84
			C68	No. 15 Oven Burner Exhaust	2.881E-02	EF	Above Avg	0.84
			C69	No. 16 Oven Burner Exhaust	2.881E-02	EF	Above Avg	0.84
			C70	No. 17 Oven Burner Exhaust	2.881E-02	EF	Above Avg	0.84
			C72	CFM Forming Tunnel	1.602E-02	EF	Above Avg	0.47
			C75	CFM RTO - Oven	3.833E-01	EF	Above Avg	11.22
			C99	CFM Forming Tunnel	1.602E-02	EF	Above Avg	0.47
			G13	NGF Tire Cord Line #1 RTO	1.484E-01	EC	Average	4.35

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
				Scenario Total	**3.415E+00**			**100**
1	PM - PARTICULATE MATTER	N/A - M08						
			A06	Cooling Tower #1	1.481E-02	EF	Average	1.98
			A07	Cooling Tower #2	1.481E-02	EF	Average	1.98
			A58	Cooling Tower #4	1.481E-02	EF	Average	1.98
			B01	107 Furnace Stack (West)	1.172E-01	SM	Doc	15.68
			B05	107 Dust Collector Ex. (West)	4.125E-03	EF	USEPA_B	0.55
			B06	107 Dust Collector Ex. (East)	4.125E-03	EF	USEPA_B	0.55
			C48	Mat Line Oven Charge Stack	1.250E-02	EC	C	1.67
			C49	Mat Line Main Oven Stack	1.375E-01	EC	C	18.39
			C50	Mat Line Oven Discharge Stack	1.250E-02	EC	C	1.67
			C51	Mat Line PRD Stack	7.096E-02	EC	C	9.49
			C73	CFM Binder Cyclone	1.441E-01	EC	Average	19.27
			D63	Filter Box Louvre Exhaust	5.133E-02	EC	C	6.87
			D64	Filter Box Louvre Exhaust	5.133E-02	EC	C	6.87
			G39	Batch House D/C Exhaust	5.219E-03	EC	USEPA_B	0.70

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			G40	Batch House D/C Exhaust	1.459E-02	EC	USEPA_B	1.95
			G45	Batch House D/C Exhaust, Mixed Batch Silo	6.500E-03	EC	USEPA_B	0.87
			G46	Bad Batch D/C Exhaust #1	6.500E-03	EC	USEPA_B	0.87
			G47	Bad Batch D/C Exhaust #2	5.469E-03	EC	USEPA_B	0.73
			G48	Batch Ingredient Dust Collector	5.469E-03	EC	USEPA_B	0.73
			G50	Batch Ingredient Dust Collector (Silos 5, 10, 11)	5.219E-03	EC	USEPA_B	0.70
			G52	Batch Ingredient Dust Collector	7.813E-03	EC	USEPA_B	1.05
			G61	Batch Ingredient D/C Exhaust (Silo #18)	6.250E-03	EC	USEPA_B	0.84
			G62	Batch Ingredient D/C Exhaust (Silo #19)	6.250E-03	EC	USEPA_B	0.84
			G63	Batch Ingredient D/C Exhaust (Silo #20)	6.250E-03	EC	USEPA_B	0.84
			G64	Batch Ingredient D/C Exhaust (Silo #21)	6.250E-03	EC	USEPA_B	0.84
			G65	Batch Ingredient Dust Collector	1.047E-02	EC	USEPA_B	1.40
			G68	Batch Ingredient D/C Exhaust (Silo # 1, 3, 9)	5.219E-03	EC	USEPA_B	0.70
				Scenario Total	**7.475E-01**			**100**
190	SILICA-RESPIRABLE (<10um DIAMETER), QUARTZ	14808-60-7						
			B05	107 Dust Collector Ex. (West)	2.558E-03	EC	Average	8.46

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			B06	107 Dust Collector Ex. (East)	2.558E-03	EC	Average	8.46
			G40	Batch House D/C Exhaust	1.459E-02	EC	Average	48.26
			G45	Batch House D/C Exhaust, Mixed Batch Silo	4.030E-03	EC	Average	13.33
			G46	Bad Batch D/C Exhaust #1	6.500E-03	EC	Average	21.50
				Scenario Total	**3.024E-02**			**100**
5	SULPHUR DIOXIDE	7446-09-5						
			B01	107 Furnace Stack (West)	1.680E+00	MB	Above Avg	100.00
				Scenario Total	**1.680E+00**			**100**
74	TOLUENE	108-88-3						
			A12	Pre-Mix Level Exhaust #1	2.002E-03	EC	Average	9.31
			A13	Pre-Mix Level Exhaust #2	2.002E-03	EC	Average	9.31
			B15	107C Forming Scrap Tunnel Exhaust	3.003E-03	EC	Average	13.96
			B16	107B Forming Scrap Tunnel Exhaust	3.003E-03	EC	Average	13.96
			B40	OUT OF SERVICE (105 Forming Scrap Tunnel Exhaust)	3.003E-03	EC	Average	13.96
			C100	CFM Forming Tunnel	4.710E-04	EC	Average	2.19
			C101	CFM Forming Tunnel	4.710E-04	EC	Average	2.19
			C60	Binder Circ. Tank Exhaust	2.002E-03	EC	Average	9.31

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
			C65	No. 12 Oven Burner Exhaust	7.918E-04	EC	Average	3.68
			C67	No. 14 Oven Burner Exhaust	7.918E-04	EC	Average	3.68
			C68	No. 15 Oven Burner Exhaust	7.918E-04	EC	Average	3.68
			C69	No. 16 Oven Burner Exhaust	7.918E-04	EC	Average	3.68
			C70	No. 17 Oven Burner Exhaust	7.918E-04	EC	Average	3.68
			C72	CFM Forming Tunnel	4.710E-04	EC	Average	2.19
			C73	CFM Binder Cyclone	6.280E-04	EC	Average	2.92
			C75	CFM RTO - Oven	1.884E-05	EC	Average	0.09
			C99	CFM Forming Tunnel	4.710E-04	EC	Average	2.19
				Scenario Total	**2.151E-02**			**100**
584	ZINC OXIDE	1314-13-2						
			B01	107 Furnace Stack (West)	1.002E-01	EC	Average	100.00
				Scenario Total	**1.002E-01**			**100**

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Hexavalent Chromium Emission Inventory
Current Operating Scenario
(24 hour and Annual Averaging Time)

Site Name: Owens Corning

Site Location: Guelph Glass Plant

Averaging Period: 24hr and Annual Averaging Times

Source Summary Table B - Emission Inventory Table

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
205	CHROMIUM (VI) COMPOUNDS	18540-29-9						
			B01	107 Furnace Stack (West)	3.552E-05	VST	Highest	15.11
			B08	General Exhaust Above Furnace	2.052E-06	VST	Highest	0.87
			B10	General Exhaust Above T107B F/H	2.390E-06	VST	Highest	1.02
			B11	107B Forehearth Stack	1.507E-04	VST	Highest	64.10
			B32	General Exhaust Above T106	2.390E-06	VST	Highest	1.02
			B34	General Exhaust Above T107A F/H	2.390E-06	VST	Highest	1.02
			B35	General Exhaust Above CFM Main Channel	2.390E-06	VST	Highest	1.02
			B38	105 Forehearth Stack	3.319E-05	VST	Highest	14.12
			C79	General Exhaust West CFM F/H	2.039E-06	VST	Highest	0.87
			C80	General Exhaust East CFM F/H	2.039E-06	VST	Highest	0.87
				Scenario Total	**2.351E-04**			**100**

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Estimation Techniques: MB-mass balance calculation, EF-emission factor calculation
V-ST-validated source testing, EC-engineering calculation

Scenario Name *144539_24hr_Annual_HexChr_Current_R1*

Hexavalent Chromium Emission Inventory
Future Operating Scenario (Action Plan)
(24 hour and Annual Averaging Time)

Site Name: Owens Corning

Site Location: Guelph Glass Plant

Averaging Period: 24 hour and Annual Averaging Times

Source Summary Table B - Emission Inventory Table

Contam. ID	Contaminant Name	CAS#	Source ID	Source Description	Emission Rate (g/s)	Estimation Technique	Data Quality	% of Facility Emissions
205	CHROMIUM (VI) COMPOUNDS	18540-29-9						
			B10	General Exhaust Above T107B F/H	9.080E-07	VST	Highest	0.55
			B24	105 Furnace Stack (West)	2.184E-05	ST	Above Avg	13.12
			B25	105 Furnace Stack (East)	2.184E-05	ST	Above Avg	13.12
			B32	General Exhaust Above T106	9.080E-07	VST	Highest	0.55
			B33	OUT OF SERVICE (Gen Exhaust Above T105)	3.119E-06	ST	Above Avg	1.87
			B34	General Exhaust Above T107A F/H	9.080E-07	VST	Highest	0.55
			B35	General Exhaust Above CFM Main Channel	9.080E-07	VST	Highest	0.55
			B38	105 Forehearth Stack	1.098E-04	VST	Highest	65.97
			C79	General Exhaust West CFM F/H	3.099E-06	VST	Highest	1.86
			C80	General Exhaust East CFM F/H	3.099E-06	VST	Highest	1.86
				Scenario Total	**1.664E-04**			**100**

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Estimation Techniques: MB-mass balance calculation, EF-emission factor calculation
V-ST-validated source testing, EC-engineering calculation

Scenario Name *144539_24hr_Annual_HexChr_Future_R1*

Appendix E Insignificant Sources Documentation

LEHDER

Source Id	Insignificant Emission Threshold
30 min Dispersion Factor ug/m3 / g/s	12000

Insignificant Contaminants (Emission Threshold)

30-min Screening POI

Ingredient ID	Contaminant	CAS #	30 min Emission Rate (g/s)	Emission Threshold Concentration [Site Wide ER * B-1 DF * 2]	30 min Facility MAX GLC (ug/m3)	30 min POI Criteria (ug/m3)	Schedule	Limiting Effect	% of Criteria	Model Stage	Significant?
7	CARBON MONOXIDE	630-08-0	5.80E-02	1.39E+03	5	6000	Schedule 2	health	0.1%	Stage 1	Insignificant (Emission Threshold)
316	ETHANOL (ETHYL ALCOHOL)	64-17-5	4.98E-01	1.19E+04	47	19000	1/2-hr Guideline	odour	0.2%	Stage 1	Insignificant (Emission Threshold)
74	TOLUENE	108-88-3	2.15E-02	5.16E+02	2	2000	Schedule 2	odour	0.1%	Stage 1	Insignificant (Emission Threshold)
3554	Dibromoacetonitrile	3252-43-5	7.67E-04	1.84E+01	0	39.6	Future		0.2%	Stage 1	Insignificant (Emission Threshold)

Diesel Fired Emergency Equipment
> 600 HP

Source Information	
Source ID	**B51**
Description	Emergency Generator
Power Rating (hp)	1000
Testing Load (%)	100%
Weekly Testing Minutes	20
Sensitive Receptor within 500 m?	Y

NO_x Emission Rate		
LEHDER ID	**Contaminant**	**1/2-hour Emission Rate *(g/s)***
4	NO_x AS NO2	2.02

NO_x Ground-Level Concentration at Sensitive Receptor				
Equipment ID	**1/2-hour Dispersion Factor ($\mu g/m^3/g/s$)**	**POI Concentration *($\mu g/m^3$)***	**Criteria *($\mu g/m^3$)***	**Percent of Criteria**
B51	94	189.06	500	38%

Sample Calculations

1/2-hour NO_x Emission Rate:

1/2-hour Emission Rate (g/s) = Power Rating (hp) x Emission Factor (lb/hp-hr) x Testing Load (%) Conversion Factor from lb/hr to g/s
1/2-hour Emission Rate (g/s) = 1000 x 0.024 x 1 x 0.126 x 20/30
1/2-hour Emission Rate (g/s) = 2.02

Notes

GLC = Ground Level Concentration

Emission Factors									
ContID	**Contaminant**	**Generator Power Rating**	**Emission Factor**	**Emission Factor Units**	**Source**	**Rating**	**Date**	**Conversion Factor from lb/hr to g/s**	**Conversion Factor from hp to kg/yr**
4	NITROGEN OXIDES (EXPRESSED AS NO2)	hp	0.024	lb/hp-hr	AP 42 3.4 Table 3.4-1	B	Oct-96	1.26E-01	4.54E-01

References AP42 Chapter 3.3 -Gasoline and Diesel Industrial Engines
http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s03.pdf

Diesel Fired Emergency Equipment
> 600 HP

Source Information	
Source ID	**B51**
Description	Emergency Generator
Power Rating (hp)	1000
Testing Load (%)	100%
Weekly Testing Minutes	20
Sensitive Receptor within 500 m?	Y

NO_x Emission Rate		
LEHDER ID	**Contaminant**	**1/2-hour Emission Rate *(g/s)***
4	NO_x AS NO2	2.02

NO_x Ground-Level Concentration at Sensitive Receptor				
Equipment ID	**1/2-hour Dispersion Factor ($\mu g/m^3/g/s$)**	**POI Concentration *($\mu g/m^3$)***	**Criteria *($\mu g/m^3$)***	**Percent of Criteria**
B51	94	189.06	500	38%

Sample Calculations

1/2-hour NO_x Emission Rate:

1/2-hour Emission Rate (g/s) = Power Rating (hp) x Emission Factor (lb/hp-hr) x Testing Load (%) Conversion Factor from lb/hr to g/s
1/2-hour Emission Rate (g/s) = 1000 x 0.024 x 1 x 0.126 x 20/30
1/2-hour Emission Rate (g/s) = 2.02

Notes

GLC = Ground Level Concentration

Emission Factors									
ContID	**Contaminant**	**Generator Power Rating**	**Emission Factor**	**Emission Factor Units**	**Source**	**Rating**	**Date**	**Conversion Factor from lb/hr to g/s**	**Conversion Factor from hp to kg/yr**
4	NITROGEN OXIDES (EXPRESSED AS NO2)	hp	0.024	lb/hp-hr	AP 42 3.4 Table 3.4-1	B	Oct-96	1.26E-01	4.54E-01

References AP42 Chapter 3.4 - Large Stationary Diesel and All Stationary Dual-fuel Engines
http://www.epa.gov/ttn/chief/ap42/ch03/final/c03s04.pdf

Appendix F Hexavalent Chromium Emission Calculations

LEHDER

Owens Corning Guelph Glass Plant
Data for the Current Hexavalent Chromium Emissions

Hexavalent Chromium Emission Rates - Process Stacks

Source ID	Source Description	Measured Emission Rate (ug/s)	Conversion Factor	Emission Rate (g/s)	Reference
B01	107 Furnace Stack (West)	36	0.000001	3.60E-05	Validated Source Testing June 2014 - project 144539B
B11	107B Forehearth Stack	151	0.000001	1.51E-04	Validated Source Testing June 2014 - project 144539B
B38	105 Forehearth Stack	33.2	0.000001	3.32E-05	Validated Source Testing September 2014 (Re-test project 144539B)

Hexavalent Chromium Emission Rates - General Ventilation Exhausts

Source ID	Source Description	Blank Corrected Emission Rate (g/s)	Reference
B08	Furnace Hall Roof Exhaust #2	2.05E-06	Source Testing (Post Validated) May 2014 - project 144539A
B10	Furnace Hall RooF Exhaust #3	2.39E-06	Source Testing (Post Validated) May 2014 - project 144539A
C80	Room Ventilation CFM Forehearth	2.04E-06	Source Testing (Post Validated) May 2014 - project 144539A
B32	Furnace Hall Roof Exhaust #2	2.39E-06	Source services same general area as B10 (Furnace Hall Exhaust #3). Emissions estimated to be identical.
B34	Furnace Hall Roof Exhaust #1	2.39E-06	Source services same general area as B10 (Furnace Hall Exhaust #3). Emissions estimated to be identical.
B35	Furnace Hall Roof Exhaust #3	2.39E-06	Source services same general area as B10 (Furnace Hall Exhaust #3). Emissions estimated to be identical.
C79	Room Ventilation CFM Forehearth	2.04E-06	Source services same general area as C80 (CFM forehearth). Emissions estimated to be identical.

LEHDER Environmental Services Ltd.

Company:	Owens Corning	**Pollutant:**	Hexavalent Chromium
Plant:	Guelph	**Method:**	EPA Method 0061
Stack:	B38 - East Forehearth	**Project No.:**	144539B

Reviewed by GB

Measurement Parameter		Test #1 15-Sep-14 14:07 - 15:53	Test #2 16-Sep-14 8:03 - 9:27	Test #3 16-Sep-14 9:51 - 11:14	Average
Hexavalent Chromium Concentration					
	$\mu g/R.m^3$	18.9	16.0	21.8	18.9
Hexavalent Chromium Mass Rate	µg/s	35.4	28.4	35.7	33.2
	mg/s	0.035	0.028	0.036	0.033
	g/hr	0.13	0.10	0.13	0.12
	lb/hr	2.81E-04	2.26E-04	2.83E-04	2.63E-04

LEHDER Environmental Services Ltd.

Company:	Owens Corning	**Pollutant:**	Hexavalent Chromium
Plant:	Guelph	**Method:**	EPA Method 0061
Stack:	B11 - West Forehearth	**Project No.:**	144539B

Reviewed by GB

Measurement Parameter		Test #1 12-Jun-14 08:39 - 10:03	Test #2 12-Jun-14 10:53 - 12:21	Test #3 12-Jun-14 13:23 - 14:48	Average
Hexavalent Chromium Concentration					
	$\mu g/R.m^3$	110	88	90	96
Hexavalent Chromium Mass Rate	µg/s	175	139	138	151
	mg/s	0.18	0.14	0.14	0.15
	g/hr	0.63	0.50	0.50	0.54
	lb/hr	1.39E-03	1.10E-03	1.09E-03	1.20E-03

LEHDER Environmental Services Ltd.

Company: Owens Corning
Plant: Guelph
Stack: B1 - West Furnace

Reviewed by GB

Pollutant: Hexavalent Chromium
Method: EPA Method 0061
Project No.: 144539B
Comments: Spreadsheet modified to use averages of temp. & velocity measurements before and after each test

Measurement Parameter		Test #1 12-Jun-14 08:35 - 09:55	Test #2 12-Jun-14 12:46 - 14:06	Test #3 12-Jun-14 14:47 - 16:07	Average
Hexavalent Chromium Concentration					
	$\mu g/R.m^3$	18	23	9	17
Hexavalent Chromium Mass Rate	µg/s	38	50	19	36
	mg/s	0.038	0.050	0.019	0.036
	g/hr	0.14	0.18	0.070	0.13
	lb/hr	2.98E-04	3.94E-04	1.53E-04	2.82E-04

LEHDER Environmental Services Limited

Hexavalent Chromium Concentration Calculations

Company: Owens Corning

Location: Guelph Glass

Source: Selected Roof Ventilation Fans

Project: 144539A

Source	Test #	Date 2014	Time Hr	Test Duration min.	DGM Y	Initial DGM Volume ft^3	Final DGM Volume ft^3	Sample Volume ft^3	Sample Rate cfm	DGM Temp. °F	Barometric Pressure in Hg	Meter Pressure in H2O	ABS. Meter Pressure in Hg
Source B8	1	7-May	8:17 - 15:47	450	1.026	609.662	970.714	370	0.823	105	29.04	2.0	29.19
Source B10	1A	7-May	8:40 - 16:10	450	1.021	876.500	1232.87	364	0.808	85	29.04	2.0	29.19
Source B10	1B	7-May	8:42 - 16:12	450	0.9888	580.545	967.662	383	0.851	85	29.04	2.0	29.19
Source B10	Avg							373	0.829				
Source C80	1	7-May	8:56 - 16:33	457	0.9985	655.995	1028.40	372	0.814	62	29.04	2.0	29.19

Source	Test #	Date 2014	Time Hr	Moisture Catch g	Moisture Content (%)	Corrected Sample Volume $S.ft^3$	Dry Ref. Sample Volume $S.ft^3$ (dry)	Hex Chrome Analysis µg	Reagent Blank µg	Gas Sample Volume m^3	Raw Cr^{+6} Concentration $µg/m^3$	Blank Corrected Cr^{+6} Concentration $µg/m^3$
Source B8	1	7-May	8:17 - 15:47	18.3	0.26	343	343	2.7		9.71	0.28	0.18
Source B10	1A	7-May	8:40 - 16:10	37.2	0.51	349	348	4.3		9.85	0.44	0.33
Source B10	1B	7-May	8:42 - 16:12	32.6	0.42	368	367	2.9	1.0	10.4	0.28	0.18
Source B10	Avg				0.47	359	357	3.6		10.1	0.36	0.26
Source C80	1	7-May	8:56 - 16:33	37.7	0.48	373	372	2.5		10.5	0.24	0.14

Source	Test #	Date 2014	Time Hr	Fan Flow Rate Data* cfm (wet)	Temp (oF)	m^3/s (dry)	Raw Cr^{+6} Emission Rate g/s	Blank Corrected Cr^{+6} Emission Rate g/s
Source B8	1	7-May	8:17 - 15:47	2.69E+04	120	11.7	3.26E-06	2.05E-06
Source B10	1A	7-May	8:40 - 16:10	2.12E+04		9.23	4.03E-06	3.09E-06
Source B10	1B	7-May	8:42 - 16:12	2.12E+04	120	9.23	2.58E-06	1.69E-06
Source B10	Avg			2.12E+04		9.23	3.30E-06	2.39E-06
Source C80	1	7-May	8:56 - 16:33	3.18E+04	100	14.3	3.40E-06	2.04E-06

* Fan Data from OC Personnel / Air Audit, Inc. Report

B8 Fan low speed 2.12E+04 cfm @ 120 °F

B8 Fan middle speed 3.12E+04 cfm @ 120 °F

B8 fan ran at low speed for 193 min and middle speed for 257 min during testing. Total test time was 450 min

Time Weighting Factors: 193 min / 450 min = 0.43 at low speed; 257 min / 450 min = 0.57 at mid-speed

Time Weighted Average Speed = 0.43 x 2.1E+04 scfm + 0.57 x 3.12E+04 scfm

B8 TWA = 2.69E+04 scfm

Revised by: G. Bastien

Appendix G All Other Emission Calculations

LEHDER

Particulate

LEHDER

Owens Corning Guelph Glass Plant
Data for the Calculation of Particulate Emissions

Material Transfer Particulate Emission Rate Data

Source ID	Source Description	Batch transfer rate (kg/min)	Emission Factor (g PM/kg Transferred)	Flexibility Factor	Dust Collector Efficiency	Comments
G39	Batch House D/C Exhaust	167	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G40	Batch House D/C Exhaust	467	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G52	Batch Ingredient Dust Collector	250	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G45	Batch House D/C Exhaust, Mixed Batch Silo	208	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G46	Bad Batch D/C Exhaust #1	208	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G47	Bad Batch D/C Exhaust #2	175	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G48	Batch Ingredient Dust Collector	175	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G65	Batch Ingredient Dust Collector	335	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G50	Batch Ingredient Dust Collector (Silos 5, 10, 11)	167	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G68	Batch Ingredient D/C Exhaust (Silo # 1, 3, 9)	167	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G61	Batch Ingredient D/C Exhaust (Silo #18)	200	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G62	Batch Ingredient D/C Exhaust (Silo #19)	200	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G63	Batch Ingredient D/C Exhaust (Silo #20)	200	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13
G64	Batch Ingredient D/C Exhaust (Silo #21)	200	1.50	1.25	99.9%	Emission Factor reference :AP42 Chap 11-13

Furnace Particulate Emission Rate Data

Source ID	Source Description	Current / Max Operating Capacity kg/h	Emission Factor (gPM/kg glass pulled)	Flexibility Factor	Conversion Factor (hr to second)	Comments
B01	107 Furnace	4991	0.068	1.25	0.0002778	Source Testing - report 96127

Cooling Tower Particulate Emission Rate Data

Source ID	Source Description	Flowrate (usgpm)	Emission Factor (lbPM/1000gal)	Conversion Factors	Dissolved solids (ppm)	Comments
A06/A07/ A08/A58	Each cooling tower	1440	1.7	0.000205808	800	Emission Factor reference :AP42 Chap 13.4-1

Source ID	Source Description	air flow (m3/s)	Inlet Loading (grains/ft3)	Control Efficiency	Conversion Factors	Comments
C73	CFM Cyclone Exhaust	2.1	1	97.0%	18.823	Engineering calculation

Source ID	Source Description	air flow (m3/s)	Inlet Loading (grains/ft3)	Control Efficiency	Conversion Factor & Flex Factor	Comments
C51	**CSM Line PM Emissions**	9.44	0.00526	50.0%	2.86	CofA Application 1985 (to amend CofA 8-2096-85-866)

Source ID	Source Description	Emission Factor (g/s)	Flexibility Factor			Comments
C48/C50	source C48 - Charge Stack, C49, and C50 - discharge Hood	0.01	1.25			Source Emission Survey, Nov. 1987, Fiberglass Canada, report #87-13 &March 1990, Fiberglass Canada, report #90-4

Source ID	Source Description	Emission Factor (g/s)	Flexibility Factor			Comments
C49	main oven stack	0.11	1.25			Source Emission Survey, Nov. 1987, Fiberglass Canada, report #87-13

Source ID	Source Description	Inlet Loading (kg/hr)	Control Efficiency Baler	Control Efficiency PRD	Control Efficiency Filter Box	Comments
C63/C64	Baler PRD and Filter Box System	132	93%	90%	60%	Appln to amend 8-2250-92-006. Appln Attach #1 Oct 5, 1994 Also applied conversion factor fo 1000/3600.

Metals (Zinc and Di-Trivalent Chromium)

Owens Corning Guelph Glass Plant
Calculation of Di-Trivalent Chromium

107 Furnace West (B1)		Total Chromium	Hex Chromium		Di Tri Metallic chromium
		ug/s	ug/s	% Hex	ug/s
Project No.:	13-Oct-11	226	37	17%	189
113922	14-Oct-11	259	33	13%	226
	14-Oct-11	246	42	17%	205
Project No.:	6-Aug-13	271	46	17%	225
134401	7-Aug-13	291	24	8%	268
	7-Aug-13	200	25	13%	174
					215

confidence interval = 0.05 95%
number of samples (n) = 6
test statistic (t-value) = 2.571 from t-tables.xls
sample mean (x) = 214.5 (arithmetic mean)
standard deviation (s) = 33.059 (standard deviation of a sample using STDEV.S function)

sample uncertainty is equal to the mean +/- [t-value x standard deviation (s) / Square root of # of samples (n)]

sample uncertainty = 214.5 +/- 34.70

Uncertainty as a percentag 16%

B01 **0.000249** (g/s) ER Di,Tri Chromium

105 Forehearth (B38)		Chromium	Hex Chromium		Di Tri Metallic chromium
		ug/s	ug/s	% Hex	ug/s
Project No.:	6-Aug-13	78	12	16%	66
134401	7-Aug-13	2,927	12	0%	2915
	7-Aug-13	193	12	6%	181
					123

* test #2 not included in the assessment as it was determined anomalous - see source testing report.
confidence interval = 0.05 95%
number of samples (n) = 2
test statistic (t-value) = 4.303 from t-tables.xls
sample mean (x) = 123.1 (arithmetic mean)
standard deviation (s) = 81.175 (standard deviation of a sample using STDEV.S function)

sample uncertainty is equal to the mean +/- [t-value x standard deviation (s) / Square root of # of samples (n)]

sample uncertainty = 123.1 +/- 246.99

Uncertainty as a percentag 201%

B38 **0.000370** (g/s) ER Di,Tri Chromium

107 Forehearth (B11)		Chromium	Hex Chromium		Di Tri Metallic chromium
		ug/s	ug/s	% Hex	ug/s
Project No.:	13-Oct-11	175	188	107%	0
113922	13-Oct-11	183	174	95%	9
	14-Oct-11	149	144	97%	4
Project No.:	6-Aug-13	181	155	86%	26
134401	7-Aug-13	197	154	78%	42
	7-Aug-13	256	178	70%	78

confidence interval = 0.05 95%
number of samples (n) = 6
test statistic (t-value) = 2.571 from t-tables.xls
sample mean (x) = 26.6 (arithmetic mean)
standard deviation (s) = 29.704 (standard deviation of a sample using STDEV.S function)

sample uncertainty is equal to the mean +/- [t-value x standard deviation (s) / Square root of # of samples (n)]

sample uncertainty = 26.6 +/- 31.18

Uncertainty as a percentag 117%

B11 **0.000058** (g/s) ER Di,Tri Chromium

Zinc

107 Furnace (B01)

ZnO ER, g/s = Emission Factor, g/kg glass pull x glass pull rate, kg/hr x Uncertainty Factor x conversion factor

ZnO ER, g/s = 0.0578 g/kg x 4991 kg glass/hr x uncertainty factor of 1.25 x (1hr/3600s)

ZnO ER, g/s = 0.10021

Glass pull rate used is 4991 kg/hr

Compound	Emission factor (g/kg glass)
ZnO	0.0578

These emission factor was developed based on source testing results from 1996 (project 96127) at the pull rate during testing.

Silica

See Appendix Q for Silica Calculations

Nitrogen Dioxides (NOx)

Owens Corning Guelph Glass Plant
Emission Calculation Data for NOx from 107 furnace

Furnace NOx Emission Estimates

107

Scenario	Base Emission	Base Pull	New Pull	Gas Required to heat furnace	Incremental Gas per ton of batch	Oxidizer Factor	Uncertainty Factor	Gas Consumption w eboost	Gas Consumption wo eboost	Projected emission
	g/s	kg/hr	kg/hr	scfh	ft3/ton	3.5	1.25	sfch	sfch	g/s
All	0.32	2852	4991	11400	1500	3.5	1.25	17562	22230	2.16

Background

	Term
Emission Rate of NOx = f{fuel required to melt glass = heat of melting x Pull rate}	1
+ f{pull rate (tramp N, entrained air)}	2
+ f{fuel required to heat furnace}	3
+ f{furnace temperature}	4
+ f{leakage into furnace}	5

Term 1	Will increase with pull rate - affected by oxidizer purity and N content of fuel
Term 2	Will increase with pull rate
Term 3	Constant - affected by oxidizer purity and N content of fuel
Term 4	Essentially constant
Term 5	Constant

Discussion

Based on the above it is anticipated that a formula to predict the NOx emissions will take the form of:
NOx = m(pull rate) + b
where
m is affected by Term 1 and 2
b is a constant defined by Terms 3, 4 and 5
both m and b are dependant upon the oxidizer concentration

If we agree that the actual emission can be expressed as above then we also need to recognize that we do not have sufficient data points to determine m and b. To generate these factors, more testing under specific operating conditions will be required. To date we have essentially one data point per operating condition

So, how do we predict the effect of increased pull and oxidizer changes for the Guelph operation.

The suggested method to predict the effect of increasing pull on 105 or 107 is to ratio based on gas consumption - in other words use an emission factor (g NOx/ft3 gas) based on source testing.

General Formula:

=Base_Emission*((Gas_Required_to_heat_furnace+New_Pull*Incremental*0.0011)/(Gas_Required_to_heat_furnace+Base_Pull*Incremental*0.0011))*Oxidizer_Factor*Uncertainty_Factor*(Gas_Consumption__wo_eboost/Gas_Consumption__w_eboost)

Notes:

This approach is anticipated to provide conservative estimated unless NOx generation is largely driven by batch materials.

The Oxidizer Factor is an engineering factor that reflects the nitrogen level in the furnace during the trial tests. For 107 it reflects the nitrogen levels in the oxygen during the testing compared to the level of nitrogen in the VSA oxygen. For 105, it reflects the improved furnace construction after the rebuild to eliminate air leakage into the furnace.

Uncertainty factor of 1.25 used to reflect limited data and to ensure conservatism

Nitrogen Dioxide (NOx)

107B forehearth stack (B11)

NOx ER, g/s = (Natural gas usage, m3/s) x (AP42 Emission Factor, lb/million scf) x conversion factors

NOx ER, g/s = 0.025 m3/s x 100 lb/ million scf x (3.28^3)*(454)/1000000

NOx ER, g/s = 0.040

Source ID	Operation	Natural Gas Consumption m3/s
C72	CFM Forming Tunnel	0.02
C99	CFM Forming Tunnel	0.02
C100	CFM Forming Tunnel	0.02
C101	CFM Forming Tunnel	0.02
B01	107 Furnace Stack (West)	0.138
B11	107B Forehearth Stack	0.025
B38	105 Forehearth Stack	0.09

AP 42 1.4.1 EF = 100 lb/ million scf

Nitrogen Dioxide (NOx)

Burner exhaust (C65)

NOx ER, g/s = (nameplate capacity, MMBTU/hr) x (AP42 Emission Factor, lb/million scf) x conversion factors

NOx ER, g/s = 2.33 m3/s x 100 lb/ million scf x (1/1020)*454*(1/3600)

NOx ER, g/s = 0.029

Source ID	Operation	Natural Gas Consumption MMBtu/hr
C65	No. 12 Oven Burner Exhaust	2.33
C66	No. 13 Oven Burner Exhaust	2.33
C67	No. 14 Oven Burner Exhaust	2.33
C68	No. 15 Oven Burner Exhaust	2.33
C69	No. 16 Oven Burner Exhaust	2.33
C70	No. 17 Oven Burner Exhaust	2.33
C75	CFM RTO - Oven	31.00
C48	Mat Line Oven Charge Stack	1.04
C49	Mat Line Main Oven Stack	9.00
C50	Mat Line Oven Discharge Stack	1.04
G13	NGF Tire Cord Line #1 RTO	12.00

AP 42 1.4.1 EF = 100 lb/ million scf

Conversion factor = =(1/1020)*454*(1/3600)

comfort heating sources calculated in the same manner

Carbon Monoxide (CO)

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Carbon Monoxide (CO)

107 Furnace (B01)

CO ER, g/s = Emission Rate durng testing, g/s x Uncertainty Factor

CO ER, g/s = 0.029 g/s x 2

CO ER, g/s = 0.058

Compound	Emission Rate from Testing (g/s)
CO	0.029

This emission data is based on source testing results from December 1998 (project 99429)

Volatile Organic Compounds (VOC)

Summary of Emission Rates for Size / Binder Losses

for curing - pull rate for 107 furnace only applies

used application allocation only ~ 40%

		Binder Preparation 3			Forming 3			1	Curing					5						CFM Line 4						
		Pre-Mix Level Exhaust #1	Pre-Mix Level Exhaust #2	Binder Circ. Tank Exhaust	107C Forming Scrap Tunnel Exhaus	107B Forming Scrap Tunnel Exhaus	107A Forming Scrap Tunnel Exhaus	105 Forming Scrap Tunnel Exhaust	No.11 Oven, Lane 13 Exhaust	No.11 Oven, Lane 14 Exhaust	No.11 Oven, Lane 13 Burner	No.11 Oven, Lane 14 Burner	No.11 Oven Exit Hood	No. 12 Oven Burner Exhaust	No. 13 Oven Burner Exhaust	No. 14 Oven Burner Exhaust	No. 15 Oven Burner Exhaust	No. 16 Oven Burner Exhaust	No. 17 Oven Burner Exhaust	CFM Forming Tunnel	CFM Forming Tunnel	CFM Forming Tunnel	CFM Forming Tunnel	CFM Binder Cyclone	CFM RTO - Oven	Total Facility Emission Rate (g/s)
		A12	A13	C60	B15	B16	B39	B40	C26	C27	C28	C29	C30	C65	C66	C67	C68	C69	C70	C72	C99	C100	C101	C73	C75	
Contaminant	CAS #	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s
METHANOL (METHYL ALCOHOL,	67-56-1	0.0341	0.0341	0.0341	0.0683	0.0683	0.0000	0.0683						0.0324		0.0324	0.0324	0.0324	0.0324	0.0107	0.0107	0.0107	0.0107	0.026766	0.00080	0.5396
ETHANOL (ETHYL ALCOHOL)	64-17-5	0.0315	0.0315	0.0315	0.0630	0.0630	0.0000	0.0630						0.0299		0.0299	0.0299	0.0299	0.0299	0.0099	0.0099	0.0099	0.0099	0.024691	0.00074	0.4978
TOLUENE	108-88-3	0.0020	0.0020	0.0020	0.0030	0.0030	0.0000	0.0030						0.0008		0.0008	0.0008	0.0008	0.0008	0.0005	0.0005	0.0005	0.0005	0.000628	0.00002	0.0215
ACETIC ACID	64-19-7	0.0338	0.0338	0.0338	0.0675	0.0675	0.0000	0.0675						0.0321		0.0321	0.0321	0.0321	0.0321	0.0106	0.0106	0.0106	0.0106	0.02648	0.00079	0.5339
Dibromoacetonitrile	3252-43-5	8.07E-05	8.07E-05	8.07E-05	8.07E-05	8.07E-05	0.00E+00	8.07E-05						3.95E-05		3.95E-05	3.95E-05	3.95E-05	3.95E-05	1.34228E-05	1.34228E-05	1.34228E-05	1.34228E-05	3.07E-05	9.2E-07	0.000767

Emission Factor Development:

The emission factors for the binder components are developed using the following methdology:

$$Emission\ \ Factor\ , \frac{g\ binder}{kg\ glass\ \ pull} = (Max\ Fraction\ \ of\ Component\ ) \times (Applicatio\ n\ Efficiency\ \ \%)$$
$$\times (Flexibilit\ y\ Factor\ ) \times \left(Applicatio\ n\ Rate\ , \frac{g\ binder}{kg\ glass\ \ pull} \right)$$

The maximum fraction of each component in the binder is proprietary information. The detailed information for the development of the emission factor is located in Appendix Q (Confidential).

The following table summarizes the emission factors and % loss assigned to each section of the process:

			Allocation of Losses-Main			Allocation of Losses-CFM			
Contaminant	CAS #	MAX Emission Factor (g/kg)	Binder Room	Application	Curing	Binder Room	Application	Binder Application	Curing
Methanol	67-56-1	3.7E-01	20%	40%	40%	20%	40%	25%	15%
Ethanol	64-17-5	3.4E-01	20%	40%	40%	20%	40%	25%	15%
Toluene	108-88-3	1.4E-02	30%	45%	25%	30%	45%	15%	10%
Acetic Acid	64-19-7	3.7E-01	20%	40%	40%	20%	40%	25%	15%
dibromoacetonitrile	3252-43-5	2.6E-04	33%	33%	34%	35%	35%	20%	10%

Example Calculation for Methanol from Source A12

Source A12 is one of three exhausters from the Binder Preparation Area. So the total emissions from the Binder Preparation Area are calculated and allocated evenly to each of the exhausters.

ER Acetic Acid, g/s (A12) = ['Emission Factor Acetic Acid (g/kg glass pull)] x [Facility Glass Pull rate (kg/hr)] x [Total % loss for Binder Preparation] x (1/3 stacks) x Flexibility Factor x Conversion Factors

ER Acetic Acid, g/s (A12) = 0.3654 (g/kg) x 4990.9 kg glass pulled/hr x 0.2 x (1/3) x 1 x 1hr/3600s

ER Acetic Acid, g/s (A12) = 0.0338

Acid Gases

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Hydrogen Fluoride (HF) and Hydrogen Chloride (HCl)

107 Furnace (B01) HF

HF ER, g/s = Emission Factor, g/kg glass pull x glass pull rate, kg/hr x Uncertainty Factor x conversion factor

HF ER, g/s = 0.01 g/kg x 4991 kg glass/hr x uncertainty factor of 1.25 x (1hr/3600s)

HF ER, g/s = 0.01733

Glass pull rate used is 4991 kg/hr

Compound	Emission factor (g/kg glass)
HF	0.01
HCl	0.006

These emission factors are developed based on source testing results from December 1998 (project 99429) at the pull rate during testing.

Appendix H Reg. 346 Modeling

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Reg 346 Stage 1 Modeling

HURON STREET

HURON STREET

YORK ROAD

(−21m,203m)

(394m,203m)

(0m,180m)

(−21m,180m)

FORMERLY HERSHEY STREET

HOOPER STREET

Max POI for NOx and Particulate Matter at (394m, 127m)

(155m,56m)

Max POI for V1 Dispersion Factor at (227m, 56m)

Max POI for Silica and V2 Dispersion Factor at (363m, 55.2m)

(394m,56m)

PROPERTY LINE

SITE ORIGIN
(0m,0m)

(155m,0m)

LEHDER
Excellence in Industrial Air Quality Services ©
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704 MARA STREET, SUITE 210
POINT EDWARD, ON N7V 1X4
T 519-336-4101 F 519-336-4311
www.lehder.com

LEHDER PROJECT NUMBER: 144539AA	Guelph Glass plant Owens Corning Canada
DATE: March 2015	
LEHDER DRAWING NUMBER: B−154246	**Site Plan and Maximum POI Locations (O.Reg. 346 Modeling)**

0 25m 50m 75m 100m

SCALE: 1:1500 (1mm=1.5meter)

W:\DRAWINGS\154246.dwg

Source Id	Insignificant Emission Threshold	V1	V2
30 min Dispersion Factor ug/m3 / g/s	12000	94	394

30-min Screening POI

Ingredient ID	Contaminant	CAS #	30 min Emission Rate (g/s)	30 min Facility MAX GLC (ug/m3)	30 min POI Criteria (ug/m3)	Schedule	Limiting Effect	% of Criteria	Model Stage	Significant?		
5	SULPHUR DIOXIDE	7446-09-5	1.68E+00	158	830	Schedule 2	health_vegetation	19%	Stage 1	Significant	157.552	
584	ZINC OXIDE	1314-13-2	1.00E-01	9	100	Schedule 2		9%	Stage 1	Significant	9.398	
423	HYDROGEN FLUORIDE -GASEOUS-GROWING SEASO	7664-39-3	1.73E-02	2	4.3	Schedule 2	vegetation	38%	Stage 1	Significant	1.625	
421	HYDROGEN CHLORIDE	7647-01-0	1.04E-02	1	60	Schedule 2	health	2%	Stage 1	Significant	0.975	
329	METHANOL (METHYL ALCOHOL, WOOD ALCOHOL)	67-56-1	5.40E-01	51	12000	Schedule 2	health	0%	Stage 1	Significant	50.605	
318	ACETIC ACID	64-19-7	5.34E-01	50	2500	Schedule 2	Odour	2%	Stage 1	Significant	50.064	
368	Chromium Compounds (Di-,Tri-,metallic)	7440-47-3	6.77E-04	0	1.5	Future	health	4%	Stage 1	Significant	0.064	

♀ OC Guelph 144539
V1 Dispersion Factor

Property line co-ordinates

1=(0. 0.) # 2=(0. 180.) # 3=(-21. 180.) # 4=(-21. 203.)
5=(394. 203.) # 6=(394. 56.) # 7=(155. 56.) # 8=(155. 0.)

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	x	y
	m	gm/s	m	m	deg	m	m
1	9.1	1.00	149.0	207.0	.0	226.	126.

V1

♀

V1DF
MAXIMUM GROUND LEVEL CONCENTRATION
VERSION 2.00

Date: March 19 2015

Application No: 144539
Reviewer: Ali Elhussein

Data from file: V1DF.STK

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	X	Y
	m	gm/s	m	m	deg	m	m
1	9.1	1.00	149.0	207.0	.0	226.	126.

Single Source Maximum Ground Level Concentrations

Source	Stability	Maximum Conc (ug/m3)	Distance (m)	Wind Speed (m/sec)
1	C	63.814	104.	5.000
	D	113.56	104.	5.000

Maximum off-property ground level concentration 93.421 ug/m3
Stability D
Wind direction 270.745 deg
Wind speed 5.000 m/s
Coordinates 226.9 55.2 (m)

Maximum Concentration along the property line 93.779 ug/m3
Stability D
Wind direction 270.573 deg
Wind speed 5.000 m/s
Coordinates 227. 56. (m)
♀

♀ OC Guelph Project 144539
V2 Dispersion Factor

Property line co-ordinates

1=(0. 0.) # 2=(0. 180.) # 3=(-21. 180.) # 4=(-21. 203.)
5=(394. 203.) # 6=(394. 56.) # 7=(155. 56.) # 8=(155. 0.)

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	x	y
	m	gm/s	m	m	deg	m	m
1	5.4	1.00	139.0	58.0	.0	362.	127.

V2

♀

V2DF
MAXIMUM GROUND LEVEL CONCENTRATION
VERSION 2.00

Date: March 19 2015

Application No: 144539
Reviewer: Ali Elhussein
Title: -

Data from file: V2DF.STK

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	X	Y
	m	gm/s	m	m	deg	m	m
1	5.4	1.00	139.0	58.0	.0	362.	127.

Single Source Maximum Ground Level Concentrations

Source	Stability	Maximum Conc (ug/m3)	Distance (m)	Wind Speed (m/sec)
1	C	170.49	29.	5.000
	D	249.44	29.	5.000

Maximum off-property ground level concentration 394.27 ug/m3
Stability D
Wind direction 270.830 deg
Wind speed 5.000 m/s
Coordinates 363.0 55.2 (m)

Maximum Concentration along the property line 392.68 ug/m3
Stability D
Wind direction 268.822 deg
Wind speed 5.000 m/s
Coordinates 361. 56. (m)

Reg 346 Stage 2 Modeling

30-min Screening POI

Ingredient ID	Contaminant	CAS #	30 min Emission Rate (g/s)	30 min Facility MAX GLC (ug/m3)	30 min POI Criteria (ug/m3)	Schedule	Limiting Effect	% of Criteria	Model Stage	Significant?
1	PM - PARTICULATE MATTER	N/A - M08	7.48E-01	82	100	Schedule 2	visibility	82%	Stage 2	Significant
4	NITROGEN OXIDES (EXPRESSED AS NO2)	10102-44-0	3.41E+00	332	500	Schedule 2	health	66%	Stage 2	Significant
190	SILICA-RESPIRABLE (<10um DIAMETER), QUARTZ	14808-60-7	3.02E-02	12	15	1/2-hr Guideline	health	79%	Stage 2	Significant

♀ OC Guelph Project 144539
Stage 2 NOx Modelling R2

Property line co-ordinates

1=(0. 0.) # 2=(0. 180.) # 3=(-21. 180.) # 4=(-21. 203.)
5=(394. 203.) # 6=(394. 56.) # 7=(155. 56.) # 8=(155. 0.)

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	x	y	
	m	gm/s	m	m	deg	m	m	
1	9.1	3.30	149.0	207.0	.0	226.	126.	V1
2	5.4	.15	139.0	58.0	.0	362.	127.	V2

♀

V1V2NXR2
MAXIMUM GROUND LEVEL CONCENTRATION
VERSION 2.00

Date: March 27 2015

Application No: 144539
Reviewer: Ali Elhussein

Data from file: V1V2NxR2.STK

nitrogen dioxide

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	X	Y
	m	gm/s	m	m	deg	m	m
1	9.1	3.30	149.0	207.0	.0	226.	126.
2	5.4	.15	139.0	58.0	.0	362.	127.

Single Source Maximum Ground Level Concentrations

Source	Stability	Maximum Conc (ug/m3)	Distance (m)	Wind Speed (m/sec)
1	C	210.59	104.	5.000
	D	374.74	104.	5.000
2	C	25.296	29.	5.000
	D	37.009	29.	5.000

All Stacks Tested

Maximum off-property ground level concentration	308.29	ug/m3
Stability	D	
Wind direction	270.745	deg
Wind speed	5.000	m/s
Coordinates	226.9 55.2	(m)

Maximum Concentration along the property line	332.33	ug/m3
Stability	D	
Wind direction	.191	deg
Wind speed	5.000	m/s
Coordinates	394. 127.	(m)

♀

♀ OC Guelph Project 144539
Stage 2 Particulate Matter

Property line co-ordinates

1=(0. 0.) # 2=(0. 180.) # 3=(-21. 180.) # 4=(-21. 203.)
5=(394. 203.) # 6=(394. 56.) # 7=(155. 56.) # 8=(155. 0.)

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	x	y	
	m	gm/s	m	m	deg	m	m	
1	9.1	.65	149.0	207.0	.0	226.	126.	V1
2	5.4	.975E-01	139.0	58.0	.0	362.	127.	V2

♀

V1V2PMR2
MAXIMUM GROUND LEVEL CONCENTRATION
VERSION 2.00

Date: March 27 2015

Application No: 144539
Reviewer: Ali Elhussein

Data from file: V1V2PMR2.STK

Particulate

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	X	Y
	m	gm/s	m	m	deg	m	m
1	9.1	.65	149.0	207.0	.0	226.	126.
2	5.4	.975E-01	139.0	58.0	.0	362.	127.

Single Source Maximum Ground Level Concentrations

Source	Stability	Maximum Conc (ug/m3)	Distance (m)	Wind Speed (m/sec)
1	C	41.486	104.	5.000
	D	73.824	104.	5.000
2	C	16.618	29.	5.000
	D	24.313	29.	5.000

All Stacks Tested

Maximum off-property ground level concentration	81.620	ug/m3
Stability	D	
Wind direction	.226	deg
Wind speed	5.000	m/s
Coordinates	396.2 126.7	(m)

Maximum Concentration along the property line	82.321	ug/m3
Stability	D	
Wind direction	.191	deg
Wind speed	5.000	m/s
Coordinates	394. 127.	(m)

♀

♀ OC Guelph Project 144539
Stage 2 Modelling Silica

Property line co-ordinates

1=(0. 0.) # 2=(0. 180.) # 3=(-21. 180.) # 4=(-21. 203.)
5=(394. 203.) # 6=(394. 56.) # 7=(155. 56.) # 8=(155. 0.)

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	x	y	
	m	gm/s	m	m	deg	m	m	
1	9.1	.614E-02	149.0	207.0	.0	226.	126.	V1
2	5.4	.301E-01	139.0	58.0	.0	362.	127.	V2

♀

V1V2SILI
MAXIMUM GROUND LEVEL CONCENTRATION
VERSION 2.00

Date: March 19 2015

Application No: 144539
Reviewer: Ali Elhussein

Data from file: V1V2Silica.STK

Silica Modeling

Virtual Sources

Number	Height	Emission Rate	Width	Length	Angle	X	Y
	m	gm/s	m	m	deg	m	m
1	9.1	.614E-02	149.0	207.0	.0	226.	126.
2	5.4	.301E-01	139.0	58.0	.0	362.	127.

Single Source Maximum Ground Level Concentrations

Source	Stability	Maximum Conc (ug/m3)	Distance (m)	Wind Speed (m/sec)
1	C	.39169	104.	5.000
	D	.69702	104.	5.000
2	C	5.1318	29.	5.000
	D	7.5082	29.	5.000

All Stacks Tested

Maximum off-property ground level concentration 11.890 ug/m3
Stability D
Wind direction 270.830 deg
Wind speed 5.000 m/s
Coordinates 363.0 55.2 (m)

Maximum Concentration along the property line 11.842 ug/m3
Stability D
Wind direction 268.822 deg
Wind speed 5.000 m/s
Coordinates 361. 56. (m)
♀

Appendix I AERMOD Modeling Setup

Ministry of the Environment and Climate Change

Environmental Monitoring and Reporting Branch

125 Resources Road
Etobicoke ON M9P 3V6
Tel.: 416 235-6300
Fax: 416 235-6235

Ministère de l'Environnement et de l'Action en matière de changement climatique

Direction de la Surveillance Environnmentale

125, chemin Resources
Etobicoke ON M9P 3V6
Tél. : 416 235-6300
Téléc. : 416 235-6235

November 27, 2014
Robert Nixon, Engineering Leader
Owens Corning Composite Materials Canada - LP
247 York Road
Guelph, Ontario
N1H 6P6

Dear Madam/Sir:

Re: Request for Approval under Paragraph 3 of section 13(1) of Regulation 419/05
For use of Site Specific Meteorological Data:
Owens Corning Composite Materials Canada - LP-Owens Corning Guelph Glass Plant (located at 247 York Road, Guelph, Ontario)

In accordance with the application for approval under s.13(1) of Regulation 419/05 for use of site specific meteorological data, I am approving the use of site specific data in preparing an Emission Summary Dispersion Modelling (ESDM) as requested by Owens Corning Composite Materials Canada - LP and signed by you dated November 17, 2014.

The site specific meteorological data referenced as the Guelph Turfgrass data is an accurate reflection of the meteorological conditions for the proposed modelling assessment, given the proximity of the meteorological station to the facility's location.

A fully processed meteorological data set for the 5 years from 2009 to 2013 has been prepared by the Ministry of the Environment and Climate Change with wind-sector dependent land use specific to the application area, using wind and temperature data from the Guelph Turfgrass station and other variables from the Waterloo, Kitchener/Waterloo and Toronto Pearson International airport station. This meteorological dataset was prepared using the AERMET 14134 meteorological pre-processor computer program, and can be used to run the AERMOD model. It has been prepared to model discharges only from the above-referenced facility.

The data were prepared in reply to a request submitted in relation to the preparation of an ESDM report under O. Reg. 419/05 and is approved for use in subsequent ESDM reports for this specific facility until such time as (i) the ministry officially adopts a new regulatory version of the AERMET computer program or (ii) there are significant land use changes in vicinity of the facility.

Yours truly,

Yvonne Hall
Director, Section 13, O. Reg. 419/05

cc: District Manager, Guelph District Office
Director, Section 9, Environmental Protection Act
Environmental Approvals Branch

Subject : RE: Land Use for Owens Corning Guelph
Date : Tuesday, July 08, 2014 11:21 am
Linked to : Bruce Gillies
From : "Gillies, Bruce (ENE)" <Bruce.Gillies@ontario.ca>
To : Penny McInnis <pmcinnis@lehder.com>
Cc : Nixon.Robert D. <Robert.D.Nixon@owenscorning.com>

Hi Penny,

The ministry is in agreement with the proposal outlined in your memo of July 4, 2014, to use 'rural' dispersion coefficients in your modelling for Owens Corning Guelph.

Regards,
Bruce

Bruce Gillies, P.Eng.
Air Pollution Control Engineer
Standards Development Branch
Ontario Ministry of the Environment and Climate Change
40 St. Clair Ave. W., 7th floor
Toronto, Ontario, M4V 1M2
Phone: 416-212-4457
Fax: 416-327-9187
bruce.gillies@ontario.ca

From: Penny McInnis [mailto:pmcinnis@lehder.com]
Sent: July-04-14 12:19 PM
To: Gillies, Bruce (ENE)
Cc: Nixon.Robert D.
Subject: Land Use for Owens Corning Guelph

Hi Bruce,
As discussed, here is the memo outlining how we have calculated the land use for use in AERMOD. We look forward to feed back when its available. Thank you.

Sincerely,

Penny McInnis, P.Eng.
LEHDER Environmental Services Limited
Suite 210, 704 Mara Street
Point Edward, Ontario
N7V 1X4
Tel: 519-336-4101 ext. 245
Fax: 519-336-4311
www.lehder.com/mcinnis

Memo

To:	Bruce Gillies	CC:	Rob Nixon
Company:	Ministry of Environment	Project:	144539
From:	Penny McInnis	Date:	July 4, 2014
Re:	Land Use Determination for Owens Corning Guelph		

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

Bruce,

As discussed, I am providing a summary of LEHDER's land use determination for the property surrounding the Owens Corning Guelph Glass Facility. We are providing this information to ensure MOE approval of this determination prior to modeling for the Site Specific Standard for this facility.

The AERMOD dispersion model requires selection of Rural or Urban for the surrounding land use in addition to the met data. The EMRB has provided us with processed site specific met and in an effort to be consistent we have utilized the land use evaluation by the EMRB in order to make the urban vs. rural selection in AERMOD. Our assessment has determined that greater than 50% of the 3 km area surrounding the facility is classified as rural and therefore the rural algorithms should be used in AERMOD. Details of this assessment are outlined below.

There are 2 land use classifications of interest in this assessment; U1 and U2. The following table summarizes the details associated with each.

Table 1 – Classification Descriptions

EMRB Code	Description	AERSURFACE Guide Classification	AERSURFACE Description	ADMGO equivalency
U1	Urban 1 (High)	22	High Intensity Residential	Urban
U2	Urban 2 (Low)	21	Low Intensity Residential	Rural*

LEHDER is considering U2 (low intensity residential) as rural in accordance with Section 5.4.5 of the Air Dispersion Modeling Guide of Ontario, Version 2.0. This is

based on the definition provided in Appendix B of the AERSURFACE Guide where Low Intensity Residential is defined as:

> *"Includes areas with a mixture of constructed materials and vegetation. Constructed materials account for 30-80 percent of the cover. Vegetation may account for 20-70 percent of the cover. These areas most commonly include single-family housing units. Population densities will be lower than in high intensity residential areas."*

The low intensity residential land use category (on its own) accounts for approximately 50% of the land use within 3 km as shown below. Therefore the interpretation of this category is critical to the selection of rural or urban algorithms in the modeling.

Table 2 – Summary of Land Use Assessment

Description	EMRB Code	% of Total 3km Area
High Intensity Residential	U1	18.7 %
Low Intensity Residential	U2	50.7 %
Crops, Forest and Grassland	CR, FO, GR	30.5 %
TOTAL % RURAL		**81 %**

LEHDER's interpretation is that rural should be used in the modeling. However, due to the amount of AERMOD modeling that will be required as part of the Site Specific Standard, we are requesting that the MOE review and either approve this selection of 'rural' or provide direction on a rationale for classifying the area as urban.

Respectfully submitted,
LEHDER Environmental Services Ltd.

Penny McInnis
Principal

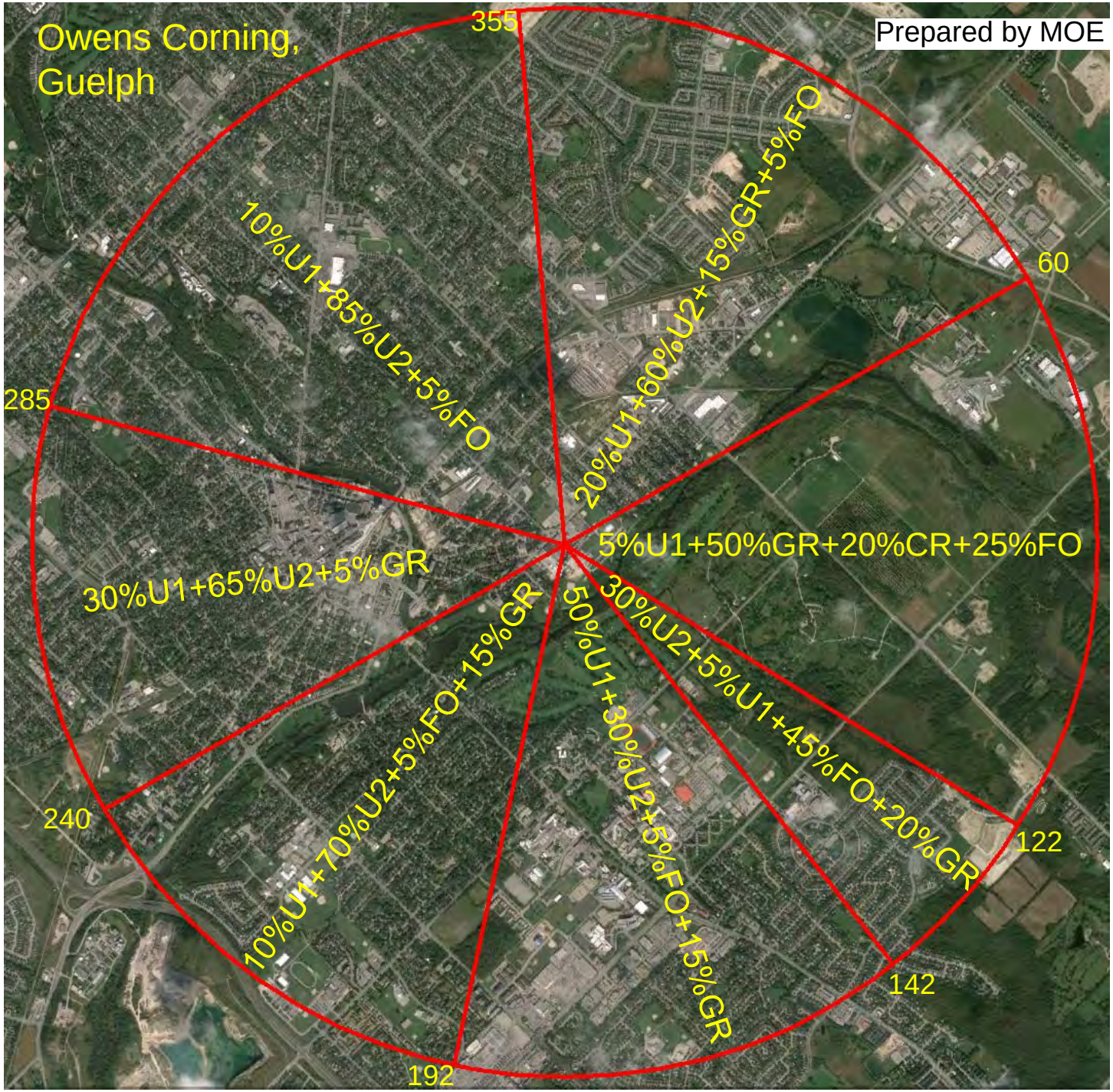
Attachments: Land Use Calculations by LEHDER
Land Use Sector Graph by MOE - EMRB

OC Guelph Land Use Area Calculations

Section	Area (km^2)	% Urban 1 (High)	% Urban 2 (Low)	% Crops	% Forest	% Grassland	Total Area (km^2) - U1 AERSURFACE Class 22 (High Intensity Residential)	Total Area (km^2) - U2 AERSURFACE Class 21 (Low Intensity Residential)	Total Rural Area (km^2) - all classifications except for U2
1	4.89	5%		20%	25%	50%	0.24	0.00	4.65
2	1.56	5%	30%		45%	20%	0.08	0.47	1.01
3	3.95	50%	30%		5%	15%	1.98	1.19	0.79
4	3.9	10%	70%		5%	15%	0.39	2.73	0.78
5	3.65	30%	65%			5%	1.10	2.37	0.18
6	5.49	10%	85%		5%		0.55	4.67	0.27
7	4.99	20%	60%		5%	15%	1.00	2.99	1.00
	28.43						5.33	14.42	8.68
							18.7%	50.7%	30.5%

Only category classified as 'urban' is U1

% Urban =	19%
% Rural =	81%


Owens Corning,
Guelph
Prepared by MOE - EMRB
355
60
285
240
122
142
192
10%U1+85%U2+5%FO
20%U1+60%U2+15%GR+5%FO
5%U1+50%GR+20%CR+25%FO
30%U1+65%U2+5%GR
30%U2+5%U1+45%FO+20%GR
50%U1+30%U2+5%FO+15%GR
10%U1+70%U2+5%FO+15%GR

- Owens Corning - Guelph, 43.544941 -80.231857
- 1,60,122, 5%U1+50%GR+20%CR+25%FO
- 2,122,142, 30%U2+5%U1+45%FO+20%GR
- 3,142,192, 50%U1+30%U2+5%FO+15%GR
- 4,192,240, 10%U1+70%U2+5%FO+15%GR
- 5,240,285, 30%U1+65%U2+5%GR
- 6,285,355, 10%U1+85%U2+5%FO
- 7,355,60, 20%U1+60%U2+15%GR+5%FO

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

Notice number ***5616-9R9L9V***
Reference number ***2850-9R9L72***

Notice

Pursuant to subsection 7(1) of O. Reg. 419/05, made under the Environmental Protection Act, R.S.O. 1990, c.E 19 (EPA)

To: **Owens Corning Composite Materials Canada - LP**
247 York Road
Guelph, Ontario
N1H 6P6

Site: **Owens Corning Guelph Glass Plant**
247 York Road, Guelph, Ontario

Part 1: Definitions

In this Notice,

"Act" means the *Environmental Protection* Act, R.S.O. 1990, c. E. 19, as amended;

"Director" means the undersigned Director or any other person appointed under section 5 of the Act as a Director for the purposes of section 7 and 52 of the Regulation;

"Facility" means the plant, structure and any other thing that may discharge a Contaminant that is located at 247 York Road, Guelph, Ontario;

"Minister" means the Minister of the Environment and Climate Change or such other member of the Executive Council as may be assigned the administration of this Act under the Executive Council Act;

"Ministry" means the ministry of the Minister;

"Notice" means this Notice number # 5616-9R9L9V, as it may be amended from time to time;

"Person Responsible" means Owens Corning Composite Materials Canada - LP being the person who discharges or causes or permits the discharge of contaminants from the Facility into the air; and

"Regulation" means Ontario Regulation 419/05: *Air Pollution - Local Air Quality*, made under the Act.

Part 2: Legal Authority

The following provisions of the regulation sets out the legal authority that forms the basis for this Notice:

7. (1) The Director may give written notice to a person who discharges or causes or permits the discharge of a contaminant from a property stating that the Director is of the opinion that, with respect to discharges of the contaminant from that property,

(a) one or more dispersion models specified in the notice would predict concentrations of the contaminant at least as accurately as an approved dispersion model;

(b) a combination specified in the notice of two or more dispersion models would predict concentrations of the contaminant at least as accurately as an approved dispersion model;

(c) a combination specified in the notice of one or more dispersion models and one or more sampling and measuring techniques would predict concentrations of the contaminant at least as accurately as an approved dispersion model; or

(d) one or more approved dispersion models specified in the notice would predict concentrations of the contaminant less accurately than,

(i) a dispersion model or combination specified under clause (a), (b) or (c), or

(ii) another approved dispersion model. O. Reg. 419/05, s. 7 (1); O. Reg. 507/09, s. 5 (1).

(2) Before the Director gives a person a notice under subsection (1), the Director shall give the person a draft of the notice and an opportunity to make written submissions to the Director during the period that ends 30 days after the draft is given. O. Reg. 419/05, s. 7 (2).

(3) If a notice is given under subsection (1) with respect to discharges of a contaminant from a property, a reference in this Part to an approved dispersion model shall be deemed, with respect to those discharges,

(a) to include a dispersion model or combination specified under clause (1) (a), (b) or (c); and

(b) not to include a dispersion model that is specified under clause (1) (d). O. Reg. 419/05, s. 7 (3).

(4) Revoked: O. Reg. 507/09, s. 5 (2).

(5) Subsection (3) does not apply to a discharge of a contaminant until,

(a) three months after the notice is given under subsection (1), unless clause (b) applies; or

(b) one year after the notice is given under subsection (1), if the notice includes a notice under clause (1) (c). O. Reg. 419/05, s. 7 (5).

(6) Subsection (5) does not apply for the purpose of preparing a report to which subsection 22 (1.1) or (1.2), 23 (3), 24 (2), 30 (5) or 33 (6) applies. O. Reg. 419/05, s. 7 (6); O. Reg. 605/05, s. 2 (1); O. Reg. 507/09, s. 5 (3).

(7) Subsection (5) does not apply to a discharge of a contaminant if subsection (3) would have the effect of permitting the discharge. O. Reg. 419/05, s. 7 (7).

(8) If a notice is given to a person under subsection (1) and section 20 does not apply to the person in respect of a contaminant, subsection (3) applies to the person in respect of the contaminant only after section 20 begins to apply to the person in respect of the contaminant. O. Reg. 419/05, s. 7 (8).

(9) Despite subsection (8), if a notice is given to a person under subsection (1) and section 20 does not apply to the person in respect of a contaminant, subsection (3) applies to the person in respect of the contaminant for the purpose of preparing a report to which subsection 22 (1.2), 23 (3), 24 (2), 30 (5) or 33 (6) applies. O. Reg. 419/05, s. 7 (9); O. Reg. 605/05, s. 2 (2); O. Reg. 507/09, s. 5 (4).

(10) If a notice given under subsection (1) is amended by a notice given under section 52, the notice under section 52 takes effect, and subsection (3) begins to apply to the amended notice,

(a) three months after the notice is given under section 52, unless clause (b) or (c) applies;

(b) one year after the notice is given under section 52, if the amendment adds a statement described in clause (1) (c) to the notice given under subsection (1), unless clause (c) applies; or

(c) on the day the notice is given under section 52, if the application of subsection (3) to the amended notice would have the effect of permitting a discharge that would otherwise be prohibited. O. Reg. 507/09, s. 5 (5).

(11) If a notice given under subsection (1) is revoked by a notice given under section 52, the notice under section 52 takes effect, and subsection (3) ceases to apply to discharges of the contaminant,

(a) three months after the notice is given under section 52, unless clause (b) applies; or

(b) on the day the notice is given under section 52, if the revocation of the notice given under subsection (1) would have the effect of permitting a discharge that would otherwise be prohibited. O. Reg. 507/09, s. 5 (5).

52. (1) Subject to subsections 7 (10) and (11), the Director may, by written notice, amend or revoke any notice given by the Director under this Regulation. O. Reg. 507/09, s. 32 (1).

(2) Before the Director gives a person a notice under subsection (1), the Director shall give the person a draft of the notice and an opportunity to make written submissions to the Director during the period that ends 30 days after the draft is given. O. Reg. 507/09, s. 32 (1).

Part 3: Grounds for Notice

3.1. For the purpose of subsection 7(1)(a) of the Regulation, I, the Director am of the opinion that AERMOD version 14134 would predict concentrations of the contaminant at least as accurately as an approved dispersion model.

For the purpose of subsection 7(1)(d) of the Regulation, I, the Director am of the opinion that AERMOD version 07026 would predict concentrations of the contaminant less accurately than AERMOD version 14134.

This notice is being issued for the following reasons:

- AERMOD version 14134 includes more advanced model algorithms, and
- the request was to use the model without using any non-default options (with the exception of the horizontal and capped sources options).

3.2 In accordance with subsection 7(2) of the Regulation, the Director provided a draft of this Notice to the Person Responsible at the Facility and provided an opportunity for that person to make written submissions to the Director during a thirty (30) day period.

Part 4: Notice Requirements

Pursuant to my authority under subsection 7(1) of the Regulation, with the issuance of this Notice, I hereby require the Person Responsible to do the following:

4.1 Use an approved dispersion model in accordance with subsection 7(3) of the Regulation.

4.2 In particular, a reference to an approved dispersion model in Part II of the Regulation shall be deemed to include:

- AERMOD version 14134.

4.3 A reference to an approved dispersion model in Part II of the Regulation shall be deemed not to include:

- AERMOD version 07026.

This notice is effective from the date of issue.

Issued this 16th day of March, 2015.

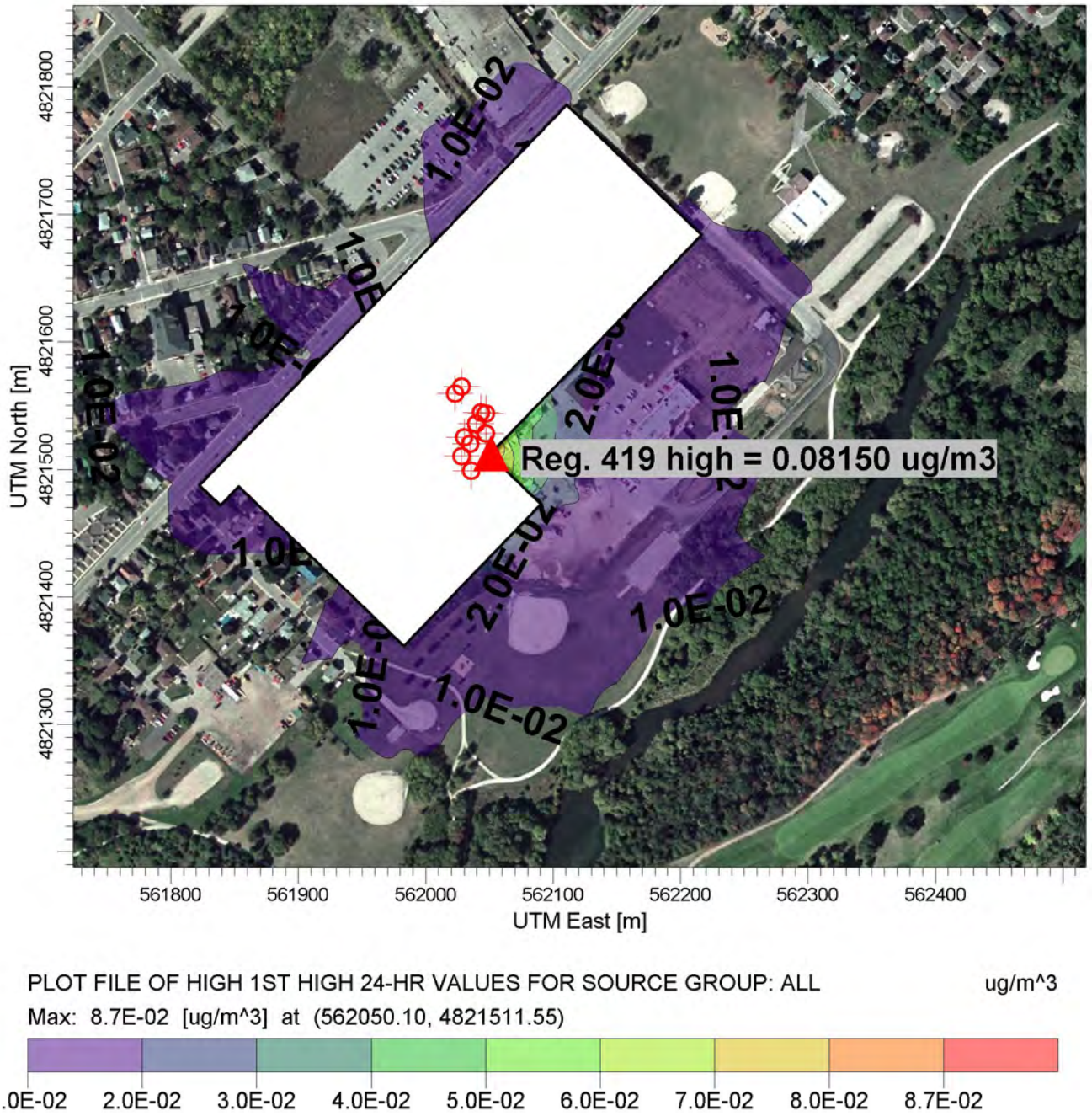
S. Klose

Steve Klose
Director, Section 7, O. Reg. 419/05

Appendix J Current 24 hour Modeling (hexavalent chromium)

PROJECT TITLE:

OC Guelph Glass Plant
24 HR Hexavalent Chromium Concentration



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 8.7E-02 [ug/m^3] at (562050.10, 4821511.55)

1.0E-02 2.0E-02 3.0E-02 4.0E-02 5.0E-02 6.0E-02 7.0E-02 8.0E-02 8.7E-02

COMMENTS: Reg. 419 High = 0.08150 ug/m3 Reg 419 Grid	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **2064**	MODELER: **C. Mackay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:5,000 0 0.1 km	
	MAX: **8.7E-02 ug/m^3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

LEHDER

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B01	562035.79	4821498.75	312.00	32.03	0.00004	597.00	19.85	0.58
		107 Furnace Stack (West)							
POINT	B11	562034.66	4821520.18	312.00	15.09	0.00015	401.00	6.31	0.68
		107B Forehearth Stack							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00003	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B08	562028.15	4821510.37	312.00	14.45	2.05E-6	321.90	12.59	1.22
		General Exhaust Above Furnace							
POINT	B10	562030.25	4821525.28	312.00	14.45	2.39E-6	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates 1 Short Term Average(s) of: 24-HR

**This Run Includes: 10 Source(s);   15 Source Group(s); and   2064 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)
         Model Outputs External File(s) of Threshold Violations (MAXIFILE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =   5.5 MB of RAM.

**File for Saving Result Arrays: 24_URT_R0.sv1
**File for Summary of Results: 24_URT_R0.sum

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

 **MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF HCR   IN MICROGRAMS/M**3   **

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B01	HIGH 1ST HIGH VALUE IS	0.00322	ON 10041724:	AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
B08	HIGH 1ST HIGH VALUE IS	0.00098	ON 10092124:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
B10	HIGH 1ST HIGH VALUE IS	0.00074	ON 13092024:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
B11	HIGH 1ST HIGH VALUE IS	0.08444	ON 10092124:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
B32	HIGH 1ST HIGH VALUE IS	0.00141	ON 11110224:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
B34	HIGH 1ST HIGH VALUE IS	0.00113c	ON 10123024:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
B35	HIGH 1ST HIGH VALUE IS	0.00066	ON 10090424:	AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
B38	HIGH 1ST HIGH VALUE IS	0.01110	ON 12112624:	AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
C79	HIGH 1ST HIGH VALUE IS	0.00038	ON 10120624:	AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
C80	HIGH 1ST HIGH VALUE IS	0.00037	ON 10122324:	AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
GENEXHTS	HIGH 1ST HIGH VALUE IS	0.00326c	ON 10123024:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
HOTSRCS	HIGH 1ST HIGH VALUE IS	0.08456	ON 10092124:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FURNACE	HIGH 1ST HIGH VALUE IS	0.00322	ON 10041724:	AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
FOREHEAR	HIGH 1ST HIGH VALUE IS	0.08451	ON 10092124:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
ALL	HIGH 1ST HIGH VALUE IS	0.08740	ON 10092124:	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 **MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   0 Warning Message(s)
 A Total of   45 Informational Message(s)

 A Total of   43824 Hours Were Processed

 A Total of   14 Calm Hours Identified

 A Total of   31 Missing Hours Identified (0.07 Percent)

    ******** FATAL ERROR MESSAGES ********

*** THE MAXIMUM 2000 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***								
RANK BY YEAR	YEAR	RANK	CONC	YYYYMMDDHH	XR	YR	TYPE	MOE Reg. 419/05
1	2009	24	0.07217	2009080424	562050.1	4821512	DC	Discarded
1	2010	2	0.0874	2010092124	562050.1	4821512	DC	Discarded
1	2011	10	0.08009	2011111924	562050.1	4821512	DC	Discarded
1	2012	3	0.08332	2012120424	562050.1	4821512	DC	Discarded
1	2013	22	0.07284	2013013024	562050.1	4821512	DC	Discarded
2	2009	23	0.07217	2009080424	562050.1	4821512	DC	Discarded
2	2010	1	0.0874	2010092124	562050.1	4821512	DC	Discarded
2	2011	9	0.08009	2011111924	562050.1	4821512	DC	Discarded
2	2012	4	0.08332	2012120424	562050.1	4821512	DC	Discarded
2	2013	21	0.07284	2013013024	562050.1	4821512	DC	Discarded
3	2009	26	0.0717	2009082524	562050.1	4821512	DC	
3	2010	6	0.0815	2010112224	562050.1	4821512	DC	Highest
3	2011	14	0.07518	2011120424	562050.1	4821512	DC	
3	2012	12	0.07746	2012030724	562050.1	4821512	DC	
3	2013	28	0.07033	2013122924	562050.1	4821512	DC	
4	2009	25	0.0717	2009082524	562050.1	4821512	DC	
4	2010	5	0.0815	2010112224	562050.1	4821512	DC	
4	2011	13	0.07518	2011120424	562050.1	4821512	DC	
4	2012	11	0.07746	2012030724	562050.1	4821512	DC	
4	2013	27	0.07033	2013122924	562050.1	4821512	DC	
5	2009	31	0.06959	2009082524	562057	4821519	DC	
5	2010	8	0.08071	2010092124	562057	4821519	DC	
5	2011	19	0.07299	2011111924	562057	4821519	DC	
5	2012	15	0.07474	2012030724	562057	4821519	DC	
5	2013	34	0.0689	2013102424	562056.8	4821505	DC	
6	2009	32	0.06959	2009082524	562057	4821519	DC	
6	2010	7	0.08071	2010092124	562057	4821519	DC	
6	2011	20	0.07299	2011111924	562057	4821519	DC	
6	2012	16	0.07474	2012030724	562057	4821519	DC	
6	2013	33	0.0689	2013102424	562056.8	4821505	DC	
7	2009	44	0.0667	2009080424	562057	4821519	DC	
7	2010	17	0.07453	2010112224	562057	4821519	DC	
7	2011	55	0.0649	2011010224	562065.8	4821512	DC	
7	2012	30	0.07015	2012092524	562050.1	4821512	DC	
7	2013	50	0.06629	2013022424	562056.8	4821505	DC	
8	2009	43	0.0667	2009080424	562057	4821519	DC	
8	2010	18	0.07453	2010112224	562057	4821519	DC	
8	2011	58	0.06406	2011120424	562057	4821519	DC	
8	2012	29	0.07015	2012092524	562050.1	4821512	DC	
8	2013	49	0.06629	2013022424	562056.8	4821505	DC	
9	2009	45	0.06669	2009072824	562050.1	4821512	DC	
9	2010	73	0.06304	2010100824	562056.8	4821505	DC	
9	2011	59	0.06406	2011120424	562057	4821519	DC	
9	2012	36	0.06819	2012092324	562056.8	4821505	DC	
9	2013	51	0.0657	2013102424	562063.5	4821499	DC	
10	2009	46	0.06669	2009072824	562050.1	4821512	DC	
10	2010	72	0.06304	2010100824	562056.8	4821505	DC	
10	2011	63	0.06344	2011010224	562056.8	4821505	DC	
10	2012	35	0.06819	2012092324	562056.8	4821505	DC	

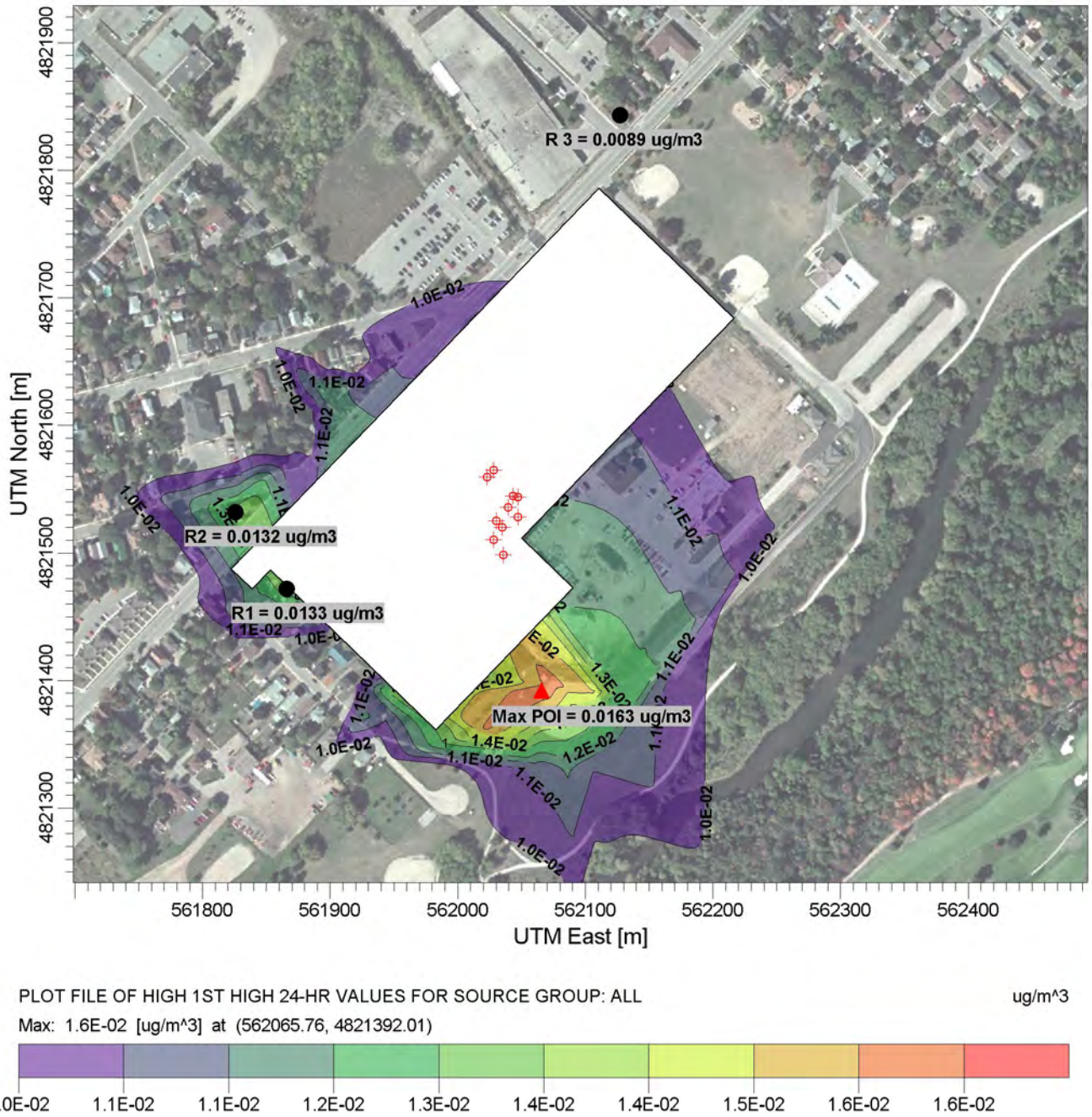
24 hour Concentration
Data Summary

Run (tab) Name:	24_URT_R0			
Run Description:	Current R1, Reg 419 grid, Site Specific Met			
	1st High	**2nd High**	**Location: Max**	**Location: Max**
Result Units:	**ug/m3**	**ug/m3**	**x**	**y**
ALL	0.0874	0.0815	562050.1	4821512
B01	0.00322	0.00313	562076.9	4821486
B11	0.08444	0.0779	562050.1	4821512
B38	0.0111	0.01056	562085.8	4821532
B08	0.00098	0.00087	562050.1	4821512
B10	0.00074	0.00063	562050.1	4821512
B32	0.00141	0.0013	562050.1	4821512
B34	0.00113	0.00094	562050.1	4821512
B35	0.00066	0.00065	562085.8	4821532
C79	0.00038	0.00037	562064	4821526
C80	0.00037	0.00036	562064	4821526
FURNACE	0.00322	0.00313	562076.9	4821486
FOREHEAR	0.08451	0.07832	562050.1	4821512
GENEXHTS	0.00326	0.00314	562050.1	4821512
HOTSRCS	0.08456	0.07854	562050.1	4821512

PROJECT TITLE:

OC Guelph Glass Plant

24 HR Hexavalent Chromium Concentration - Current Operations (Sensitive Receptor Assessment)



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 1.6E-02 [ug/m^3] at (562065.76, 4821392.01)

1.0E-02 1.1E-02 1.1E-02 1.2E-02 1.3E-02 1.4E-02 1.4E-02 1.5E-02 1.6E-02 1.6E-02

COMMENTS: 1st high at a sensitive receptor is 0.0133 1st high at the baseball diamond is 0.0163 ug/m3 Sensitive Receptor Grid Red Triangle = Max POI concentration Black Circle = Concentration at the location	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **823**	MODELER: **C. Mackay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:5,000 0 0.1 km	
	MAX: **1.6E-02 ug/m^3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B01	562035.79	4821498.75	312.00	32.03	0.00004	597.00	19.85	0.58
		107 Furnace Stack (West)							
POINT	B11	562034.66	4821520.18	312.00	15.09	0.00015	401.00	6.31	0.68
		107B Forehearth Stack							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00003	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B08	562028.15	4821510.37	312.00	14.45	2.05E-6	321.90	12.59	1.22
		General Exhaust Above Furnace							
POINT	B10	562030.25	4821525.28	312.00	14.45	2.39E-6	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates 1 Short Term Average(s) of: 24-HR

**This Run Includes: 10 Source(s);   15 Source Group(s); and   823 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)
         Model Outputs External File(s) of Threshold Violations (MAXIFILE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =   4.6 MB of RAM.

**File for Saving Result Arrays: 24_URT_SR_R0.sv1
**File for Summary of Results: 24_URT_SR_R0.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   03/02/15
*** AERMET - VERSION 14134 ***   *** 24_URT_SR_R0 (MSP_Stage2_144539_24hr_Ann_Current_R1)   ***   09:29:51

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF HCR IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
B01	HIGH	1ST HIGH VALUE IS	0.00093	ON 10031224: AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
B08	HIGH	1ST HIGH VALUE IS	0.00014	ON 13030124: AT (	562065.76,	4821392.01,	310.00,	310.00,	0.00)	DC	
B10	HIGH	1ST HIGH VALUE IS	0.00019	ON 13042924: AT (	561905.76,	4821612.01,	312.08,	312.08,	4.90)	DC	
B11	HIGH	1ST HIGH VALUE IS	0.01354	ON 12110424: AT (	562074.09,	4821396.45,	310.00,	310.00,	0.00)	DC	
B32	HIGH	1ST HIGH VALUE IS	0.00013	ON 13091324: AT (	562065.76,	4821392.01,	310.00,	310.00,	0.00)	DC	
B34	HIGH	1ST HIGH VALUE IS	0.00013	ON 11051824: AT (	561845.76,	4821552.01,	313.00,	313.00,	0.00)	DC	
B35	HIGH	1ST HIGH VALUE IS	0.00011	ON 12102924: AT (	562021.92,	4821362.23,	310.00,	310.00,	1.50)	DC	
B38	HIGH	1ST HIGH VALUE IS	0.00252	ON 13120424: AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
C79	HIGH	1ST HIGH VALUE IS	0.00012	ON 10032124: AT (	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC	
C80	HIGH	1ST HIGH VALUE IS	0.00011	ON 10032124: AT (	561905.76,	4821412.01,	311.81,	311.81,	4.90)	DC	
GENEXHTS	HIGH	1ST HIGH VALUE IS	0.00085	ON 13091324: AT (	562065.76,	4821392.01,	310.00,	310.00,	0.00)	DC	
HOTSRCS	HIGH	1ST HIGH VALUE IS	0.01556	ON 12032924: AT (	562065.76,	4821392.01,	310.00,	310.00,	0.00)	DC	
FURNACE	HIGH	1ST HIGH VALUE IS	0.00093	ON 10031224: AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
FOREHEAR	HIGH	1ST HIGH VALUE IS	0.01503	ON 12032924: AT (	562065.76,	4821392.01,	310.00,	310.00,	0.00)	DC	
ALL	HIGH	1ST HIGH VALUE IS	0.01632	ON 12032924: AT (	562065.76,	4821392.01,	310.00,	310.00,	0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 45 Informational Message(s)

A Total of 43824 Hours Were Processed

A Total of 14 Calm Hours Identified

A Total of 31 Missing Hours Identified (0.07 Percent)

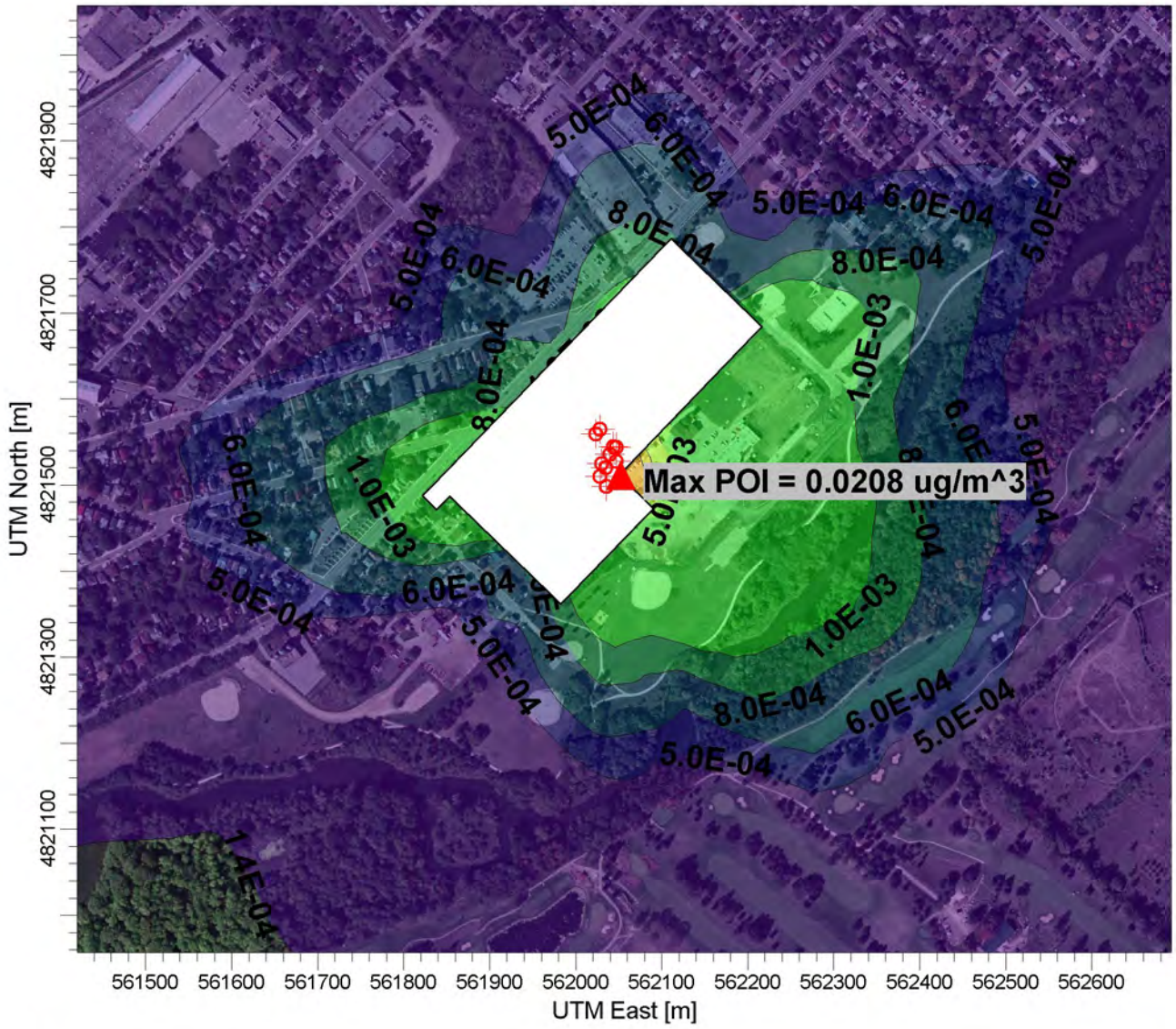
******** FATAL ERROR MESSAGES ********

Appendix K Current Annual Modeling (hexavalent chromium)

LEHDER

PROJECT TITLE:

Annual Average Hexavalent Chromium Concentration
Current Operations



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL

MICROGRAMS/M3

Max: 2.1E-02 [MICROGRAMS/M3] at (562050.10, 4821511.55)

1.4E-04 5.0E-04 6.0E-04 8.0E-04 1.0E-03 4.0E-03 5.0E-03 8.0E-03 1.0E-02 2.0E-02 2.1E-02

COMMENTS: Reg. 419 Grid Met Year 4	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **2062**	MODELER: **C. MacKay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:8,000 0 0.3 km	
	MAX: **2.1E-02 MICROGRAMS/M3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B01	562035.79	4821498.75	312.00	32.03	0.00004	597.00	19.85	0.58
		107 Furnace Stack (West)							
POINT	B11	562034.66	4821520.18	312.00	15.09	0.00015	401.00	6.31	0.68
		107B Forehearth Stack							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00003	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B08	562028.15	4821510.37	312.00	14.45	2.05E-6	321.90	12.59	1.22
		General Exhaust Above Furnace							
POINT	B10	562030.25	4821525.28	312.00	14.45	2.39E-6	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   15 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

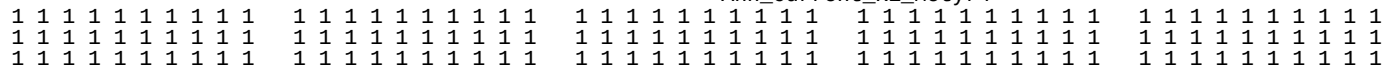
**Approximate Storage Requirements of Model =   4.6 MB of RAM.

**File for Saving Result Arrays: Ann_Current_R1_Metyr4.sv1
**File for Summary of Results: Ann_Current_R1_Metyr4.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   02/04/15
*** AERMET - VERSION 14134 ***   *** Ann_Current_R1_Metyr4 (using MSP_Stage2_144539_24hr_Ann_Current_R1) ***   11:34:03

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)



METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2012 1 1 1
AND END DATE: 2012 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B01	1ST HIGHEST VALUE IS	0.28970 AT (562063.51, 4821498.60, 310.62, 310.62, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.28957 AT (562063.51, 4821498.61, 310.62, 310.62, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.28251 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.28251 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.26671 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.26671 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.23766 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.23766 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.23461 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.23461 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
B08	1ST HIGHEST VALUE IS	0.23974 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.23974 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.19347 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.19347 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.16882 AT (562063.51, 4821498.60, 310.62, 310.62, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.16880 AT (562063.51, 4821498.61, 310.62, 310.62, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.14504 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.14504 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.14236 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.14236 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
B10	1ST HIGHEST VALUE IS	0.14165 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.14165 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.09906 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.09906 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.09774 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.09774 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.09682 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.09682 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.08777 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.08777 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B11	1ST HIGHEST VALUE IS	18.24625 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	18.24625 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	16.56909 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
	4TH HIGHEST VALUE IS	16.56909 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
	5TH HIGHEST VALUE IS	14.35418 AT (562063.51, 4821498.60, 310.62, 310.62, 0.00)	DC	
	6TH HIGHEST VALUE IS	14.33612 AT (562063.51, 4821498.61, 310.62, 310.62, 0.00)	DC	
	7TH HIGHEST VALUE IS	11.68386 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	8TH HIGHEST VALUE IS	11.68386 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	9TH HIGHEST VALUE IS	11.34534 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	11.34534 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE NETWORK GRID-ID

B32	1ST HIGHEST VALUE IS	0.28184 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.28184 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.26607 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.26607 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.24366 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.24366 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.23192 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.23192 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.14619 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
	10TH HIGHEST VALUE IS	0.14619 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B34	1ST HIGHEST VALUE IS	0.21215 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.21215 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.18896 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.18896 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.18148 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.18148 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.17542 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.17542 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.13892 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.12505 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.21498 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.21498 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.18532 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.18532 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.17196 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.17196 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.13981 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.13747 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.13269 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.10966 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	3.64655 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	3.64655 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	3.27645 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	3.27645 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	2.71208 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	2.71208 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	2.42202 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	2.36533 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	2.32195 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	2.07411 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C79	1ST HIGHEST VALUE IS	0.07637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.07637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.06762 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.06762 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06509 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05914 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.05582 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.05582 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.05192 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04549 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC

C80	1ST HIGHEST VALUE IS	0.07384	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.07384	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07289	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.06843	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06843	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05826	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.05137	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.05137	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04549	AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04427	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	1.05100	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.05100	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.99402	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.99402	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.97581	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.97581	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.88724	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.88724	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.68644	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.63200	AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
HOTSRCS	1ST HIGHEST VALUE IS	19.81591	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	19.81591	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	17.76578	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
	4TH HIGHEST VALUE IS	17.76578	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
	5TH HIGHEST VALUE IS	15.36261	AT (	562063.51,	4821498.60,	310.62,	310.62,	0.00)	DC
	6TH HIGHEST VALUE IS	15.34489	AT (	562063.51,	4821498.61,	310.62,	310.62,	0.00)	DC
	7TH HIGHEST VALUE IS	14.18248	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	14.18248	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	13.14045	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	12.58479	AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS 0.28970	AT (	562063.51,	4821498.60,	310.62,	310.62,	0.00)	DC	
	2ND HIGHEST VALUE IS 0.28957	AT (	562063.51,	4821498.61,	310.62,	310.62,	0.00)	DC	
	3RD HIGHEST VALUE IS 0.28251	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC	
	4TH HIGHEST VALUE IS 0.28251	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC	
	5TH HIGHEST VALUE IS 0.26671	AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC	
	6TH HIGHEST VALUE IS 0.26671	AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC	
	7TH HIGHEST VALUE IS 0.23766	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS 0.23766	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS 0.23461	AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC	
	10TH HIGHEST VALUE IS 0.23461	AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS 19.57825	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS 19.57825	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS 17.48327	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC	
	4TH HIGHEST VALUE IS 17.48327	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC	
	5TH HIGHEST VALUE IS 15.07291	AT (	562063.51,	4821498.60,	310.62,	310.62,	0.00)	DC	
	6TH HIGHEST VALUE IS 15.05532	AT (	562063.51,	4821498.61,	310.62,	310.62,	0.00)	DC	
	7TH HIGHEST VALUE IS 14.05742	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS 14.05742	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS 12.98153	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS 12.31808	AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC	

ALL	1ST HIGHEST VALUE IS	20.79172	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	20.79172	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	18.29420	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
	4TH HIGHEST VALUE IS	18.29420	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
	5TH HIGHEST VALUE IS	15.76776	AT (	562063.51,	4821498.60,	310.62,	310.62,	0.00)	DC
	6TH HIGHEST VALUE IS	15.74987	AT (	562063.51,	4821498.61,	310.62,	310.62,	0.00)	DC
	7TH HIGHEST VALUE IS	15.17650	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	15.17650	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	13.82689	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	12.94562	AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC

20.79 ng/m3 = 0.02079 ug/m3

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 23 Informational Message(s)

A Total of 8784 Hours Were Processed

A Total of 8 Calm Hours Identified

A Total of 9 Missing Hours Identified (0.10 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
*** NONE ***

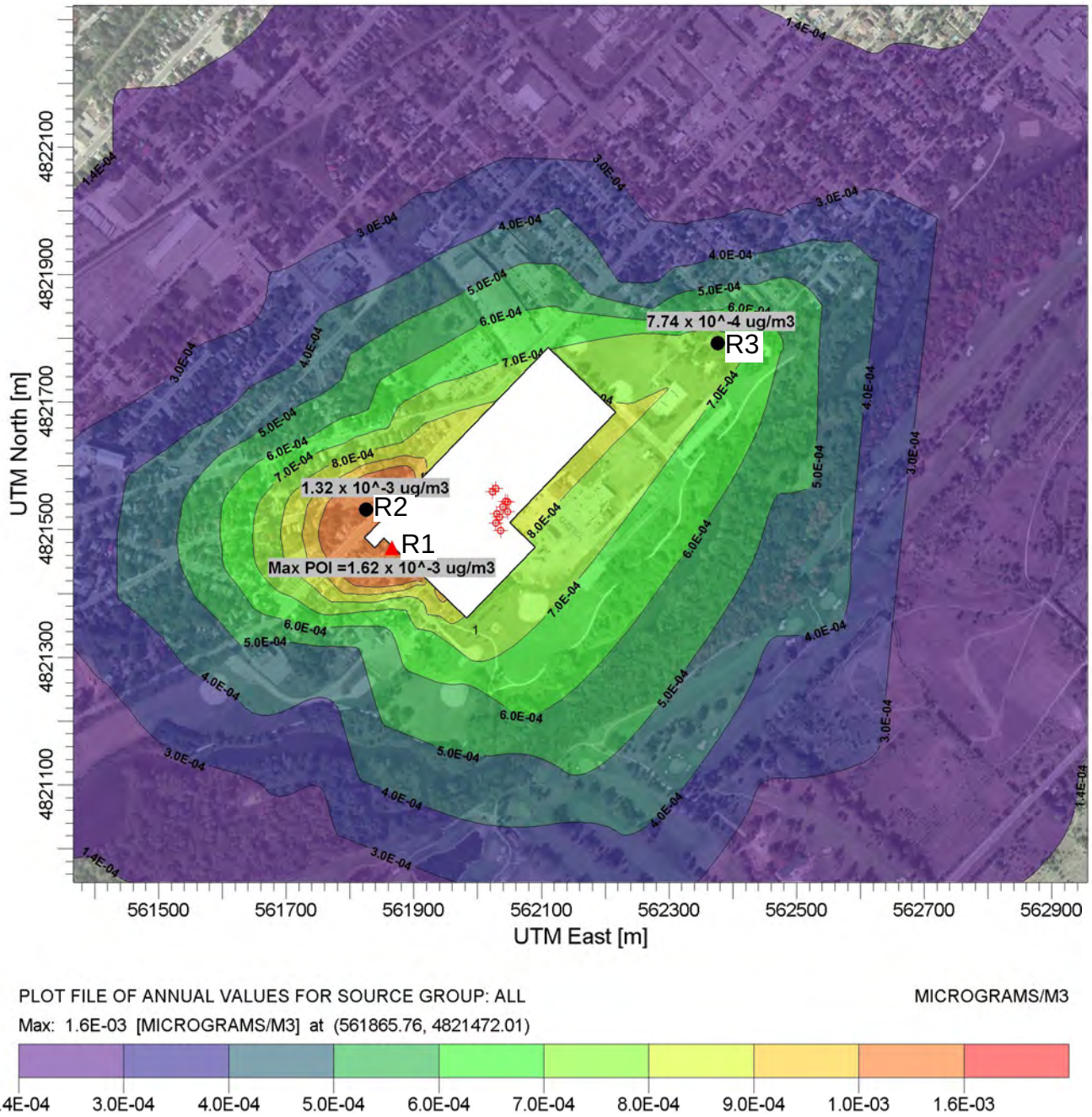
Annual Hexavalent Chromium Results
Current Operations - 5 year data set including median and average

Run (tab) Name:	Ann_Current_R1_Metyr1	Ann_Current_R1_Metyr2	Ann_Current_R1_Metyr3	Ann_Current_R1_Metyr4	Ann_Current_R1_Metyr5	
Run Description:	Current Scn R1, Reg 419 grid, Site Specific Met (2009)	Current Scn R1, Reg 419 grid, Site Specific Met (2010)	Current Scn R1, Reg 419 grid, Site Specific Met (2011)	Current Scn R1, Reg 419 grid, Site Specific Met (2012)	Current Scn R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	19.8732	19.51729	19.975	20.79172	20.61207	**20.79172**
B01	0.2867	0.34963	0.27289	0.2897	0.32412	**0.34963**
B11	17.30664	16.81987	17.44297	18.24625	18.13474	**18.24625**
B38	3.56491	4.04064	3.38146	3.64655	3.53179	**4.04064**
B08	0.21464	0.22008	0.22345	0.23974	0.2344	**0.23974**
B10	0.13599	0.13959	0.14002	0.14165	0.13988	**0.14165**
B32	0.27755	0.29464	0.27373	0.28184	0.27909	**0.29464**
B34	0.20638	0.23471	0.20034	0.21215	0.20752	**0.23471**
B35	0.20605	0.23777	0.20042	0.21498	0.20616	**0.23777**
C79	0.07197	0.09472	0.06703	0.07637	0.06974	**0.09472**
C80	0.06863	0.09487	0.06323	0.07384	0.0628	**0.09487**
FURNACE	0.2867	0.34963	0.27289	0.2897	0.32412	**0.34963**
FOREHEAR	18.71019	18.30635	18.77949	19.57825	19.38212	**19.57825**
GENEXHTS	1.01181	1.13015	0.99641	1.051	1.0285	**1.13015**
HOTSRCS	18.94692	18.58535	19.01234	19.81591	19.65278	**19.81591**

Run Description:	Current Scn R1, Reg 419 grid, Site Specific Met (2009)	Current Scn R1, Reg 419 grid, Site Specific Met (2010)	Current Scn R1, Reg 419 grid, Site Specific Met (2011)	Current Scn R1, Reg 419 grid, Site Specific Met (2012)	Current Scn R1, Reg 419 grid, Site Specific Met (2013)	**MAX**	**Average**	**Median**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.0198732	0.01951729	0.019975	0.02079172	0.02061207	**0.020792**	**0.020154**	**0.019975**
B01	0.0002867	0.00034963	0.00027289	0.0002897	0.00032412	**0.00035**	**0.000305**	**0.00029**
B11	0.01730664	0.01681987	0.01744297	0.01824625	0.01813474	**0.018246**	**0.01759**	**0.017443**
B38	0.00356491	0.00404064	0.00338146	0.00364655	0.00353179	**0.004041**	**0.003633**	**0.003565**
B08	0.00021464	0.00022008	0.00022345	0.00023974	0.0002344	**0.00024**	**0.000226**	**0.000223**
B10	0.00013599	0.00013959	0.00014002	0.00014165	0.00013988	**0.000142**	**0.000139**	**0.00014**
B32	0.00027755	0.00029464	0.00027373	0.00028184	0.00027909	**0.000295**	**0.000281**	**0.000279**
B34	0.00020638	0.00023471	0.00020034	0.00021215	0.00020752	**0.000235**	**0.000212**	**0.000208**
B35	0.00020605	0.00023777	0.00020042	0.00021498	0.00020616	**0.000238**	**0.000213**	**0.000206**
C79	0.00007197	0.00009472	0.00006703	0.00007637	0.00006974	**9.47E-05**	**7.6E-05**	**7.2E-05**
C80	0.00006863	0.00009487	0.00006323	0.00007384	0.0000628	**9.49E-05**	**7.27E-05**	**6.86E-05**
FURNACE	0.0002867	0.00034963	0.00027289	0.0002897	0.00032412	**0.00035**		
FOREHEAR	0.01871019	0.01830635	0.01877949	0.01957825	0.01938212	**0.019578**		
GENEXHTS	0.00101181	0.00113015	0.00099641	0.001051	0.0010285	**0.00113**	**0.001044**	**0.001029**
HOTSRCS	0.01894692	0.01858535	0.01901234	0.01981591	0.01965278	**0.019816**	**0.019203**	**0.019012**

PROJECT TITLE:

OC Guelph Glass Plant - Annual Average Hexavalent Chromium Concentration
Current Operations at sensitive receptors only



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL — MICROGRAMS/M3

Max: 1.6E-03 [MICROGRAMS/M3] at (561865.76, 4821472.01)

1.4E-04 3.0E-04 4.0E-04 5.0E-04 6.0E-04 7.0E-04 8.0E-04 9.0E-04 1.0E-03 1.6E-03

COMMENTS: Sensitive Receptor Grid Met Year 3 Red Triangle = Max POI concentration Black Circle = Concentration at the location This plot shows max conc at receptor R1 in met yr 3 See additional contour plots for maximums at R2 (yr1) and R3 (yr 5)	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **801**	MODELER: **C. MacKay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 0.3 km	
	MAX: **1.6E-03 MICROGRAMS/M3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

LEHDER

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B01	562035.79	4821498.75	312.00	32.03	0.00004	597.00	19.85	0.58
		107 Furnace Stack (West)							
POINT	B11	562034.66	4821520.18	312.00	15.09	0.00015	401.00	6.31	0.68
		107B Forehearth Stack							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00003	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B08	562028.15	4821510.37	312.00	14.45	2.05E-6	321.90	12.59	1.22
		General Exhaust Above Furnace							
POINT	B10	562030.25	4821525.28	312.00	14.45	2.39E-6	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	2.39E-6	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.04E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   15 Source Group(s); and   801 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

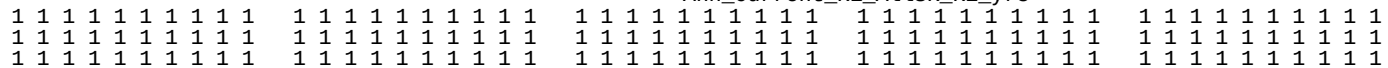
**Approximate Storage Requirements of Model =   3.9 MB of RAM.

**File for Saving Result Arrays: Ann_Current_R1_AllSR_R1_yr3.sv1
**File for Summary of Results: Ann_Current_R1_AllSR_R1_yr3.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   03/04/15
*** AERMET - VERSION 14134 ***   *** Ann_Current_R1_AllSR_R1_yr3 (MSP_Stage2_144539_24hr_Ann_Current_R1) ***   10:58:48

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)



METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2011 1 1 1
AND END DATE: 2011 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
B01	1ST HIGHEST VALUE IS	0.05307	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.05204	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
	3RD HIGHEST VALUE IS	0.05095	AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.05087	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.05001	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.04893	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.04875	AT (	561755.04,	4821468.81,	313.52,	313.52,	7.32)	DC	
	8TH HIGHEST VALUE IS	0.04697	AT (	561747.89,	4821460.23,	313.39,	313.39,	7.32)	DC	
	9TH HIGHEST VALUE IS	0.04665	AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC	
	10TH HIGHEST VALUE IS	0.04664	AT (	561725.76,	4821492.01,	314.00,	314.00,	0.00)	DC	
B08	1ST HIGHEST VALUE IS	0.01078	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.01038	AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.01022	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
	4TH HIGHEST VALUE IS	0.00998	AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC	
	5TH HIGHEST VALUE IS	0.00984	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.00952	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.00952	AT (	561845.76,	4821452.01,	313.00,	313.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00896	AT (	561825.76,	4821452.01,	313.00,	313.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00879	AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.00851	AT (	561845.76,	4821432.01,	312.40,	312.40,	0.00)	DC	
B10	1ST HIGHEST VALUE IS	0.01240	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.01114	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.01070	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC	
	4TH HIGHEST VALUE IS	0.01020	AT (	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.01017	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.00995	AT (	561845.76,	4821592.01,	313.00,	313.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.00958	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00946	AT (	561885.76,	4821612.01,	312.47,	312.47,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00939	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.00939	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
B11	1ST HIGHEST VALUE IS	1.30282	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	1.27670	AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC	
	3RD HIGHEST VALUE IS	1.17758	AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC	
	4TH HIGHEST VALUE IS	1.16193	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
	5TH HIGHEST VALUE IS	1.10099	AT (	561845.76,	4821452.01,	313.00,	313.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	1.07162	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	1.01292	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	8TH HIGHEST VALUE IS	1.00680	AT (	561865.76,	4821432.01,	312.40,	312.40,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.99313	AT (	561825.76,	4821452.01,	313.00,	313.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.97424	AT (	561845.76,	4821432.01,	312.40,	312.40,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID

B32	1ST HIGHEST VALUE IS	0.00846	AT	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00846	AT	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00796	AT	562325.76,	4821842.01,	312.00,	312.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.00794	AT	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00779	AT	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00757	AT	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	7TH HIGHEST VALUE IS	0.00740	AT	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00737	AT	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00732	AT	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.00719	AT	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC
B34	1ST HIGHEST VALUE IS	0.00848	AT	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00801	AT	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00790	AT	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.00789	AT	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00785	AT	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00773	AT	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	7TH HIGHEST VALUE IS	0.00760	AT	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	8TH HIGHEST VALUE IS	0.00757	AT	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	9TH HIGHEST VALUE IS	0.00750	AT	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	10TH HIGHEST VALUE IS	0.00746	AT	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.00948	AT	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00887	AT	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00878	AT	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	4TH HIGHEST VALUE IS	0.00870	AT	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00830	AT	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00823	AT	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC
	7TH HIGHEST VALUE IS	0.00819	AT	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00805	AT	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00801	AT	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC
	10TH HIGHEST VALUE IS	0.00798	AT	561865.76,	4821432.01,	312.40,	312.40,	0.00)	DC
B38	1ST HIGHEST VALUE IS	0.22731	AT	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.21417	AT	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	3RD HIGHEST VALUE IS	0.21183	AT	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.20934	AT	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.20847	AT	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.20153	AT	561845.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20012	AT	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	8TH HIGHEST VALUE IS	0.19556	AT	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	9TH HIGHEST VALUE IS	0.19078	AT	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	10TH HIGHEST VALUE IS	0.18950	AT	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
C79	1ST HIGHEST VALUE IS 0.00999 AT (561905.76, 4821432.01, 311.88, 311.88, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.00903 AT (561925.76, 4821412.01, 311.14, 311.14, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.00889 AT (561885.76, 4821452.01, 312.47, 312.47, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.00886 AT (561905.76, 4821412.01, 311.81, 311.81, 4.90)		DC	
	5TH HIGHEST VALUE IS 0.00873 AT (561885.76, 4821432.01, 312.19, 312.19, 4.90)		DC	
	6TH HIGHEST VALUE IS 0.00869 AT (561885.76, 4821412.01, 312.00, 312.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.00866 AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.00815 AT (561905.76, 4821392.01, 311.81, 311.81, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.00809 AT (561885.76, 4821392.01, 312.00, 312.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.00800 AT (561775.76, 4821542.01, 314.01, 314.01, 0.00)		DC	

C80	1ST HIGHEST VALUE IS	0.00833 AT (	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00819 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00803 AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.00802 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00800 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00795 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.00786 AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00777 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00771 AT (	561799.38,	4821589.67,	314.00,	314.00,	4.90)	DC
	10TH HIGHEST VALUE IS	0.00759 AT (	561885.76,	4821432.01,	312.19,	312.19,	4.90)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.06107 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.05868 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05859 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05828 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05817 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05736 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	7TH HIGHEST VALUE IS	0.05703 AT (	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC
	8TH HIGHEST VALUE IS	0.05625 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	9TH HIGHEST VALUE IS	0.05451 AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	10TH HIGHEST VALUE IS	0.05393 AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
HOTSRCS	1ST HIGHEST VALUE IS	1.56215 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.51037 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	3RD HIGHEST VALUE IS	1.40546 AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC
	4TH HIGHEST VALUE IS	1.40347 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	5TH HIGHEST VALUE IS	1.31981 AT (	561845.76,	4821452.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	1.30022 AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.26155 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	8TH HIGHEST VALUE IS	1.21305 AT (	561865.76,	4821432.01,	312.40,	312.40,	0.00)	DC
	9TH HIGHEST VALUE IS	1.20361 AT (	561825.76,	4821452.01,	313.00,	313.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.17582 AT (	561845.76,	4821432.01,	312.40,	312.40,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	0.05307 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND HIGHEST VALUE IS	0.05204 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	3RD HIGHEST VALUE IS	0.05095 AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05087 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05001 AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.04893 AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04875 AT (	561755.04,	4821468.81,	313.52,	313.52,	7.32)	DC
	8TH HIGHEST VALUE IS	0.04697 AT (	561747.89,	4821460.23,	313.39,	313.39,	7.32)	DC
	9TH HIGHEST VALUE IS	0.04665 AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC
	10TH HIGHEST VALUE IS	0.04664 AT (	561725.76,	4821492.01,	314.00,	314.00,	0.00)	DC
FOREHEAR	1ST HIGHEST VALUE IS	1.51128 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.46748 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	3RD HIGHEST VALUE IS	1.35881 AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC
	4TH HIGHEST VALUE IS	1.35143 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	5TH HIGHEST VALUE IS	1.27555 AT (	561845.76,	4821452.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	1.25022 AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.20848 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	8TH HIGHEST VALUE IS	1.17499 AT (	561865.76,	4821432.01,	312.40,	312.40,	0.00)	DC
	9TH HIGHEST VALUE IS	1.15876 AT (	561825.76,	4821452.01,	313.00,	313.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.13635 AT (	561845.76,	4821432.01,	312.40,	312.40,	0.00)	DC

ALL	1ST HIGHEST VALUE IS	1.62083	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.56854	AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC
	3RD HIGHEST VALUE IS	1.45972	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	4TH HIGHEST VALUE IS	1.45889	AT (	561865.76,	4821452.01,	313.00,	313.00,	4.90)	DC
	5TH HIGHEST VALUE IS	1.37028	AT (	561845.76,	4821452.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	1.35415	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.32014	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	8TH HIGHEST VALUE IS	1.26552	AT (	561865.76,	4821432.01,	312.40,	312.40,	0.00)	DC
	9TH HIGHEST VALUE IS	1.25167	AT (	561825.76,	4821452.01,	313.00,	313.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.22753	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC

1.621 ng/m3 = 1.62 x 10^-3 ug/m3
This occurs at sensitive receptor R1

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 6 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 3 Calm Hours Identified

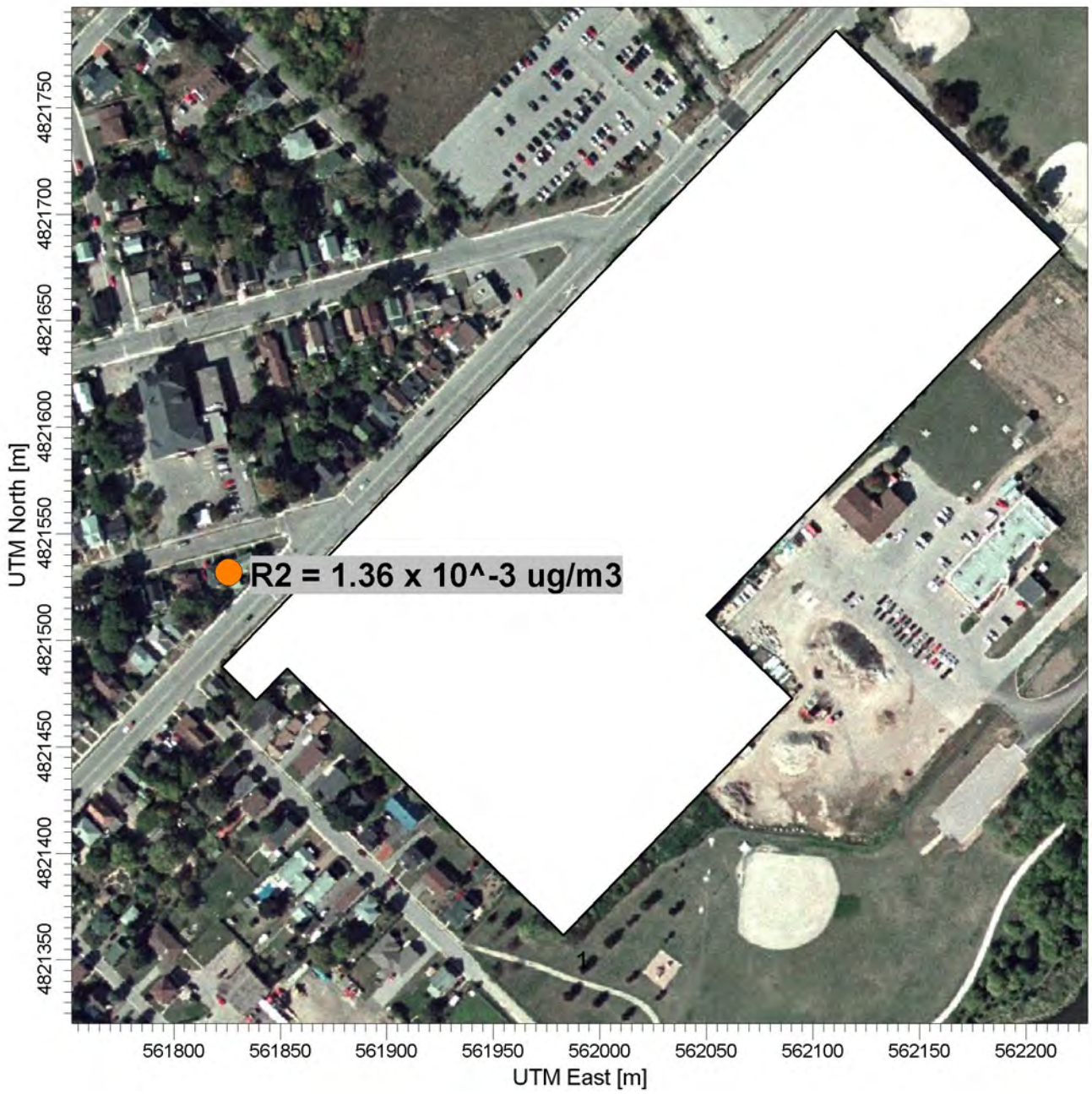
A Total of 0 Missing Hours Identified (0.00 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
*** NONE ***

PROJECT TITLE:

OC Guelph Glass Plant
Annual Current Hexavalent Chromium Concentration maximum at receptor R2



COMMENTS: This is the maximum concentration that occurs at a sensitive receptor to the north (R2). Occurs in Met Year 1.	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **1**	MODELER: **C. MacKay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:3,000 0 0.1 km	
	MAX: **0.0136 ug/m3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

PROJECT TITLE:

OC Guelph Glass Plant
Annual Current Hexavalent Chromium Concentration maximum at Receptor R3

COMMENTS: This is the maximum concentration that occurs at a sensitive (R3). Occurs in met year 5.	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **1**	MODELER: **C. MacKay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:8,000 0 0.3 km	
	MAX: **0.000807 ug/m3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

Appendix L Default Pollution Control Combination

LEHDER

Calculation of Hexavalent Chromium Emission Rates
Default Pollution Control Combination (as presented in the Technical Benchmarking)

Emission Rate Calculations for the Default Pollution Control Combination (G_R1)

							before RC	after RC	before RC	After RC-CFM only							
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	107 Furnace	105 Furnace	105 Furnace	conventional FH	conventional FH	CFM FH	CFM FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
		2016 Reconfiguration Base Emission Rate (g/s)		1.78E-05	1.78E-05		7.53E-05		3.32E-05		1.19E-06	1.19E-06	2.05E-06	1.19E-06	1.19E-06	2.04E-06	2.04E-06	1.55E-04
		Uncertainty Applied		1.15	1.15		1.15		1.15		1.15	1.15	1.15	1.15	1.15	1.15	1.15	
		2016 Base RC Emission Rate (g/s) with Uncertainty Factors applied		2.04E-05	2.04E-05		8.7E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
G_R1	Facility reconfiguration (RC) + Electrostatic Precipitator (DEP) or WEP or DC for hot sources (1, 2 or 3) + substituting LSC refractory in the forehearth (11) + forehearth conversion to air/gas combustion (12)	Description of Reduction Components		DEP/WEP/DC	DEP/WEP/DC		DEP/WEP/DC +		DEP/WEP/DC +									
		Individual Reduction Description		1,2 or 3	1,2 or 3		(1,2, or 3)+11+12		(1,2, or 3)+11+12		Result of 12	Result of 12		Result of 12	Result of 12			
		Reduction Efficiency 1		95%	95%		95%		95%	0%	50%	50%	0%	50%	50%	0%	0%	
		Reduction Efficiency 2					10%		10%									
		Reduction Efficiency 3					86%		86%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(1,2 or 3)+11+12		1.02E-06	1.02E-06		Exhausted out B38		1.06E-06		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.29E-05

Explanation of Calculations

Furnace:
The reconfiguration plans include taking the existing furnace (T107) out of service and restarting the T105 furnace. The emission rate for T105 furnace is estimated (conservatively) to be the same as the existing furnace as they will employ similar technologies and the same glass formulation.
However, the emissions will be discharged from two existing (currently out of service) stacks B24 and B25.
The only change to the furnace emission rates is the incorporation of a small uncertainty factor (15%) which was applied to all emission rates used in the technology benchmarking assessment.
The technology for this pollution control option is a DEP/WEP or DC prior to discharge.

Forehearths:
The reconfiguration plans include removal of approximately half of the existing conventional forehearth which currently exhausts through stack B11 (B11current), therefore the current emission rate is divided by 2 to prior to the application of any reduction efficiencies related to the control option.
There are no planned changes to the CFM forehearth (exhausting through B38current).
An uncertainty factor (55%) is applied to the emission rates from both sections of forehearth. The uncertainty factor is calculated usinghe Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System.
The technology to be implemented as part of this pollution control option (G_R1) would require the removal of the existing full scale prototype technologies currently applied to the CFM forhearth (B38current). Therefore the base emission rate prior the installation of the new technologies is similar to that of the downsized conventional forehearth.
Therefore, the new emission rate calculation for the conventional forehearth is doubled to reflect this change.
After the reconfiguration and implementation of this pollution control combination, all forehearth emissions will be exhausted through a single location at the current B38 stack.

Example Calculation for the changes to the Conventional Forehearth emissions (B11current)

New B11 ER, g/s= (Current B11 forehearth rate, g/s) / 2(for reduction of forehearth area) x (uncertainty factor of 1.15)

New B11 ER, g/s= [0.000151 , g/s / 2] x 1.15

New B11 ER, g/s= 8.7E-05

B11 ER after technologies applied = New B11 ER x (1 - reduction efficiency of technologies)

B11 ER after technologies applied = New B11 ER, g/s x (1 - 95%) x (1-10%) x (1-86%)

B11 ER after technologies applied = 5.30E-07

After Reconfiguration and implementation of the control technologies, all forehearth emissions will be exhausted through a new stack at the B38 location (here referred to above as the "B38 Combined FH" stack

B38 Combined FH stack ER, g/s= [B11 ER after technologies applied] x 2

B38 Combined FH stack ER, g/s= 0.0000005 x 2

B38 Combined FH stack ER, g/s= 1.06E-06

General Ventilation Exhausts:
The reconfiguration plans include removal of approximately half of the existing conventional forehearth which is believed to be the greatest contributor to emissions leaving the facility through most of the general ventilation exhausts.
An uncertainty factor (52%) is applied to all of the general ventilation emission rates. The uncertainty factor is calculated usinghe Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System.
Therefore, the emission rates from 5 of the general ventilation exhaust fans are reduced by 50% based on the conventional forehearth downsizing.
The installation of the control technologies on the conventional forehearth is anticipated to reduce the furnace hall emissions by the same reduction efficiency.

Example Calculation for the changes to General Ventilation Source B32

New B32 ER, g/s= (current B32 ER, g/s) / 2 (for reduction of forehearth area) x 1.52 (Source Testing Uncertainty Factor) x (1-reduction efficiency for conventional forehearth technology)

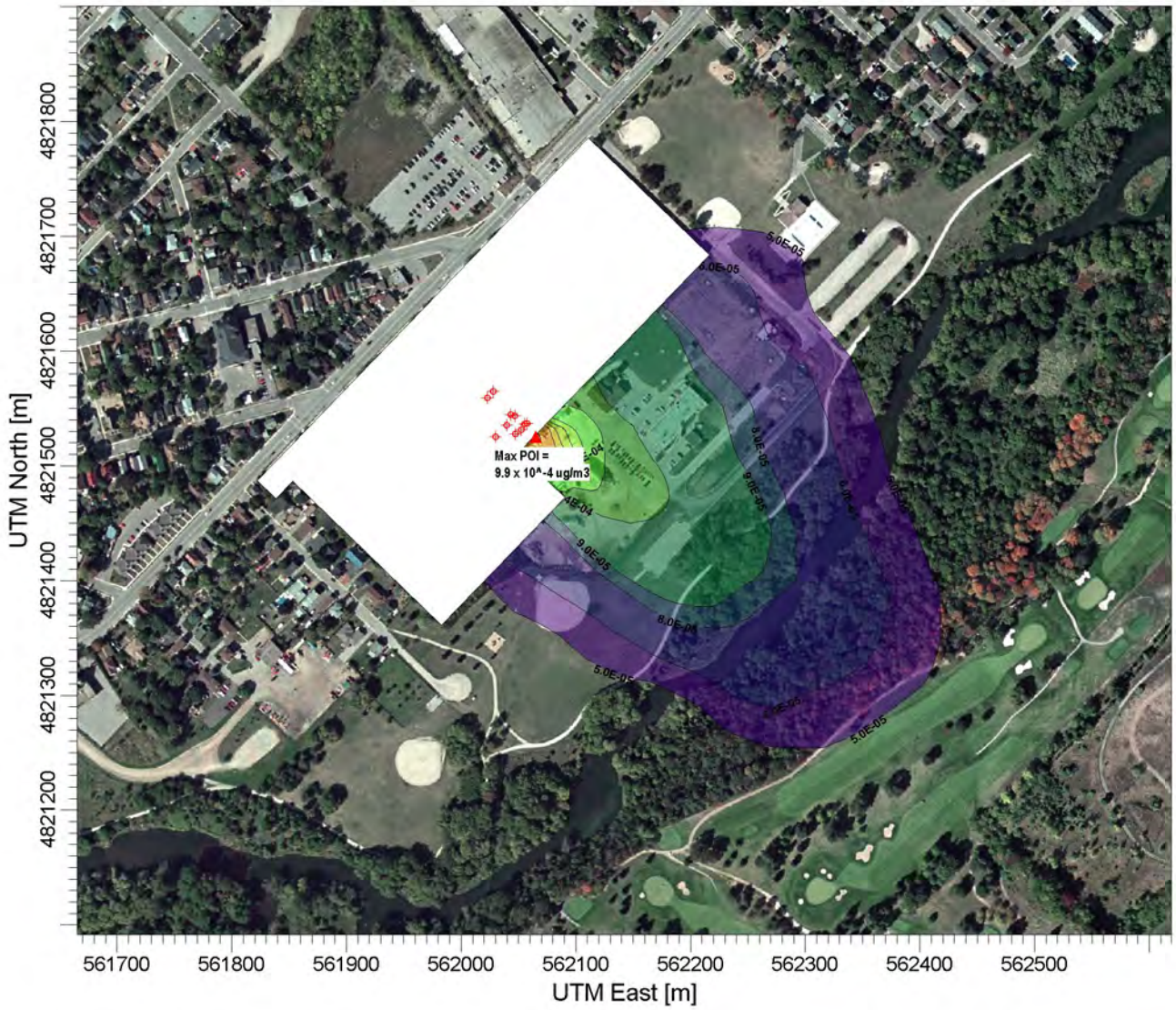
New B32 ER, g/s= 0.00000239 / 2 x 1.15 x (1-0.5)

New B32 ER, g/s= 6.87E-07

RC	Reconfiguration in 2016
RE1	Roof exhausters unchanged by process changes
RE2	Roof exhausters affected by process changes

PROJECT TITLE:

OC Guelph Glass Plant - Annual Average Hexavalent Chromium
Default Pollution Control Combination (ID G_R1) from Technical Benchmarking



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL **MICROGRAMS/M3**

Max: 9.9E-04 [MICROGRAMS/M3] at (562063.97, 4821525.92)

5.0E-05 6.0E-05 8.0E-05 9.0E-05 1.4E-04 2.0E-04 4.0E-04 5.0E-04 6.0E-04 7.0E-04 9.0E-04 1.0E-03

COMMENTS: Max POI = 9.9 x 10^-4 Met Year 2 Reg 419 Grid	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **2062**	MODELER: **C.MacKay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,000 0 0.2 km	
	MAX: **9.9E-04 MICROGRAMS/M3**	DATE: **3/18/2015**	PROJECT NO.: **144539**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	1.06E-6	379.15	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

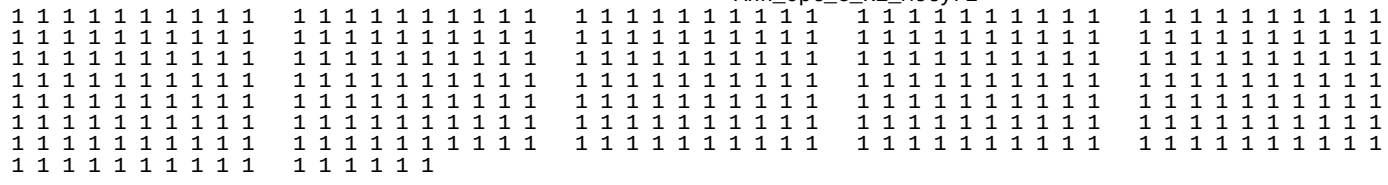
**Approximate Storage Requirements of Model =   4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_G_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_G_R1_Metyr2.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   02/27/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_G_R1_Metyr2   ***   08:20:54
                                                                                                                    PAGE   2

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                    (1=YES; 0=NO)



METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B10	1ST HIGHEST VALUE IS	0.04012 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.04012 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.02875 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.02875 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.02713 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.02713 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.02679 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.02679 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.02637 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.02637 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
B24	1ST HIGHEST VALUE IS	0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.03650 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.03461 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.03175 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.02648 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS	0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.03983 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.03983 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.03545 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.03445 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.02931 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.02528 AT (562105.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
B32	1ST HIGHEST VALUE IS	0.08470 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.08470 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.07642 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.07642 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.06892 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.06892 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.06327 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.06327 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.04438 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04392 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE NETWORK GRID-ID

B33	1ST HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B34	1ST HIGHEST VALUE IS	0.06748 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06748 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05800 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05800 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05603 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05603 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04644 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04644 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04229 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04150 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.06836 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06836 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	0.12902 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.12902 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.11085 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.11085 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09734 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.09734 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08884 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08682 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.07816 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06428 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
C79	1ST HIGHEST VALUE IS 0.10893 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.10893 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.09493 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.09149 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.09149 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.08665 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.08102 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.08102 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.06501 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.06296 AT (562105.76, 4821512.01, 311.00, 311.00, 0.00)		DC	

C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC	
FURNACE	1ST HIGHEST VALUE IS	0.10233 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.10233 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.08622 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.08622 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.08252 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.08252 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.07194 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.06620 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.06392 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.04896 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	0.12902 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.12902 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.11085 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.11085 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.09734 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.09734 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.08884 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.08682 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.07816 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.06428 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

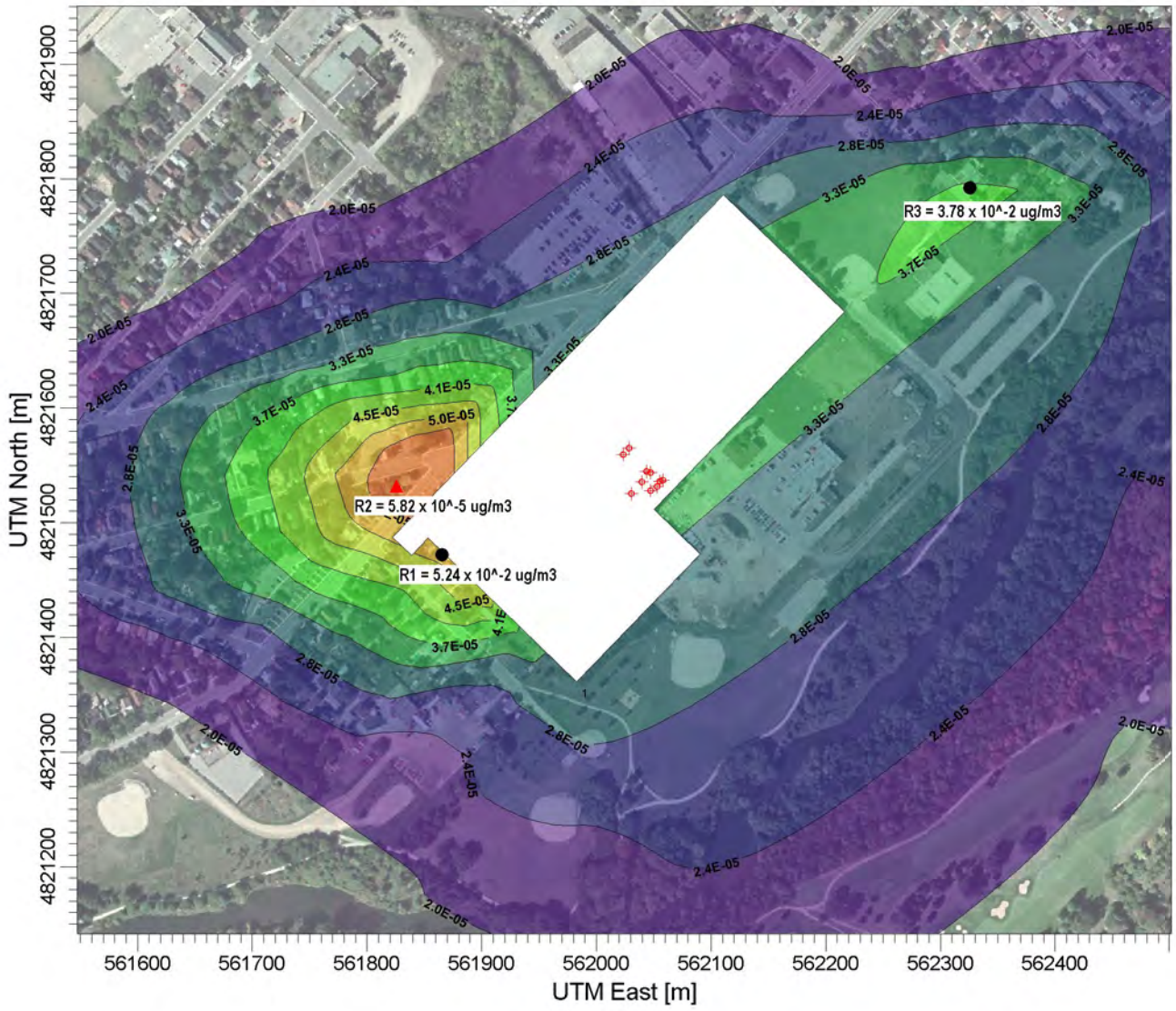
GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
GENEXHTS	1ST HIGHEST VALUE IS 0.76057 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.76057 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.65066 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.65066 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.60741 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.60741 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.54638 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.51083 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.44607 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.44607 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
ALL	1ST HIGHEST VALUE IS 0.99192 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.99192 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.83051 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.83051 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.80447 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.80447 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.70515 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.66587 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.55010 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.54250 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	

0.99192 ng/m3 = 9.9192 x 10^-4

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                 ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_G_R1_Metyr2                                              ***        08:20:54
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

PROJECT TITLE:

OC Guelph Glass Plant - Sensitive Receptor Assessment
Default Pollution Control Combination (ID G_R1) from Technical Benchmarking



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL **MICROGRAMS/M3**

Max: 5.8E-05 [MICROGRAMS/M3] at (561825.76, 4821532.01)

2.0E-05 2.4E-05 2.8E-05 3.3E-05 3.7E-05 4.1E-05 4.5E-05 5.0E-05 5.4E-05 5.8E-05

COMMENTS: Sensitive Receptor Grid Met Year 1 Red Triangle = Max POI concentration Black Circle = Concentration at the location	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **801**	MODELER: **C. Mackay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:6,000 0 0.2 km	
	MAX: **5.8E-05 MICROGRAMS/M3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   15 Source Group(s); and   801 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model =   3.9 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_G_R1_AllSR_R1_yr1.sv1
**File for Summary of Results: Ann_Opt_G_R1_AllSR_R1_yr1.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   03/04/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_G_R1_AllSR_R1_yr1 (MSP_Stage2_Opt_G_R1)   ***   07:08:22

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2009   1 1 1
AND END DATE: 2009 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   03/04/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_G_R1_AllSR_R1_yr1 (MSP_Stage2_Opt_G_R1)   ***   07:08:22
PAGE   3
**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC   Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.:   61430   Upper air station no.:   14733
Name: UNKNOWN   Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009   Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
GENEXHTS	1ST HIGHEST VALUE IS	0.04142	AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.04049	AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.03974	AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.03945	AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.03783	AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.03663	AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.03655	AT (561775.76, 4821542.01, 314.01, 314.01, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.03651	AT (561905.76, 4821432.01, 311.88, 311.88, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.03643	AT (561885.76, 4821452.01, 312.47, 312.47, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.03552	AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC	
HOTSRCS	1ST HIGHEST VALUE IS	0.01740	AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.01686	AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.01635	AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.01599	AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.01577	AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.01530	AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC	
	7TH HIGHEST VALUE IS	0.01496	AT (561865.76, 4821592.01, 313.00, 313.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.01485	AT (561845.76, 4821472.01, 313.00, 313.00, 4.90)	DC	
	9TH HIGHEST VALUE IS	0.01470	AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.01438	AT (561845.76, 4821592.01, 313.00, 313.00, 0.00)	DC	
FURNACE	1ST HIGHEST VALUE IS	0.01032	AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.01016	AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.00959	AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.00947	AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.00934	AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.00892	AT (561845.76, 4821472.01, 313.00, 313.00, 4.90)	DC	
	7TH HIGHEST VALUE IS	0.00884	AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC	
	8TH HIGHEST VALUE IS	0.00873	AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.00868	AT (561825.76, 4821472.01, 313.00, 313.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.00858	AT (561865.76, 4821592.01, 313.00, 313.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	0.00725	AT (561865.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.00676	AT (561845.76, 4821572.01, 313.00, 313.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.00654	AT (561825.76, 4821532.01, 313.47, 313.47, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.00652	AT (561827.79, 4821564.74, 313.41, 313.41, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.00646	AT (561885.76, 4821592.01, 312.47, 312.47, 4.90)	DC	
	6TH HIGHEST VALUE IS	0.00643	AT (561865.76, 4821472.01, 313.00, 313.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.00638	AT (561865.76, 4821592.01, 313.00, 313.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.00610	AT (561845.76, 4821592.01, 313.00, 313.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.00598	AT (561803.40, 4821564.48, 314.00, 314.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.00593	AT (561845.76, 4821472.01, 313.00, 313.00, 4.90)	DC	

♀ *** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 03/04/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_G_R1_AllSR_R1_yr1 (MSP_Stage2_Opt_G_R1) *** 07:08:22

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE NETWORK GRID-ID

B10	1ST HIGHEST VALUE IS	0.00348	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00311	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00310	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	4TH HIGHEST VALUE IS	0.00293	AT (	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00290	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00289	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	7TH HIGHEST VALUE IS	0.00287	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00286	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00282	AT (	561845.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.00270	AT (	561885.76,	4821612.01,	312.47,	312.47,	0.00)	DC
B24	1ST HIGHEST VALUE IS	0.00503	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00484	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00466	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.00461	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00458	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00447	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	7TH HIGHEST VALUE IS	0.00433	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00425	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00422	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	10TH HIGHEST VALUE IS	0.00412	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
B25	1ST HIGHEST VALUE IS	0.00531	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00529	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00498	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.00489	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00468	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00463	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	7TH HIGHEST VALUE IS	0.00448	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00448	AT (	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00445	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	10TH HIGHEST VALUE IS	0.00436	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.00269	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND HIGHEST VALUE IS	0.00251	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.00242	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	4TH HIGHEST VALUE IS	0.00238	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.00232	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	6TH HIGHEST VALUE IS	0.00231	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.00227	AT (	562325.76,	4821842.01,	312.00,	312.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.00212	AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC
	9TH HIGHEST VALUE IS	0.00205	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	10TH HIGHEST VALUE IS	0.00201	AT (	562325.76,	4821792.01,	312.00,	312.00,	4.90)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID		AVERAGE CONC		RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
B33	1ST HIGHEST VALUE IS	0.01208	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.01144	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.01132	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.01100	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.01092	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.01090	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
	7TH HIGHEST VALUE IS	0.01066	AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.01033	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.01010	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.01000	AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC	

B34	1ST HIGHEST VALUE IS	0.00270 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.00253 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.00242 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.00240 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.00227 AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.00225 AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.00223 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00220 AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00220 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
	10TH HIGHEST VALUE IS	0.00214 AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
B35	1ST HIGHEST VALUE IS	0.00266 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.00263 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.00261 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.00252 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	
	5TH HIGHEST VALUE IS	0.00246 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.00245 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.00241 AT (	561825.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00231 AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00225 AT (	561775.76,	4821492.01,	313.49,	313.49,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.00222 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC	
B38	1ST HIGHEST VALUE IS	0.00725 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.00676 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.00654 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.00652 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.00646 AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC	
	6TH HIGHEST VALUE IS	0.00643 AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.00638 AT (	561865.76,	4821592.01,	313.00,	313.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00610 AT (	561845.76,	4821592.01,	313.00,	313.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00598 AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.00593 AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C79	1ST HIGHEST VALUE IS	0.01141 AT (	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.01015 AT (	561905.76,	4821412.01,	311.81,	311.81,	4.90)	DC	
	3RD HIGHEST VALUE IS	0.01012 AT (	561885.76,	4821432.01,	312.19,	312.19,	4.90)	DC	
	4TH HIGHEST VALUE IS	0.01012 AT (	561925.76,	4821412.01,	311.14,	311.14,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.01007 AT (	561885.76,	4821412.01,	312.00,	312.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.01004 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.00991 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00930 AT (	561885.76,	4821392.01,	312.00,	312.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00925 AT (	561865.76,	4821412.01,	312.00,	312.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.00921 AT (	561905.76,	4821392.01,	311.81,	311.81,	0.00)	DC	
C80	1ST HIGHEST VALUE IS	0.00958 AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.00948 AT (	561905.76,	4821432.01,	311.88,	311.88,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.00947 AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.00932 AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.00931 AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.00911 AT (	561799.38,	4821589.67,	314.00,	314.00,	4.90)	DC	
	7TH HIGHEST VALUE IS	0.00902 AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.00901 AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.00880 AT (	561885.76,	4821432.01,	312.19,	312.19,	4.90)	DC	
	10TH HIGHEST VALUE IS	0.00876 AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC	

ALL	1ST HIGHEST VALUE IS	0.05827	AT (	561825.76,	4821532.01,	313.47,	313.47,	0.00)	DC
	2ND HIGHEST VALUE IS	0.05790	AT (	561865.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05580	AT (	561845.76,	4821572.01,	313.00,	313.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05573	AT (	561827.79,	4821564.74,	313.41,	313.41,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05254	AT (	561803.40,	4821564.48,	314.00,	314.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05240	AT (	561865.76,	4821472.01,	313.00,	313.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.05082	AT (	561885.76,	4821592.01,	312.47,	312.47,	4.90)	DC
	8TH HIGHEST VALUE IS	0.05036	AT (	561775.76,	4821542.01,	314.01,	314.01,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04991	AT (	561845.76,	4821472.01,	313.00,	313.00,	4.90)	DC
	10TH HIGHEST VALUE IS	0.04989	AT (	561885.76,	4821452.01,	312.47,	312.47,	0.00)	DC

0.05827 ng/m3 = 5.827 x 10^-5 ug/m3

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 0 Warning Message(s)
A Total of 0 Informational Message(s)

A Total of 8760 Hours Were Processed

A Total of 0 Calm Hours Identified

A Total of 0 Missing Hours Identified (0.00 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
*** NONE ***

Annual Hexavalent Chromium Results
Default Option from Technology Benchmarking - 5 year Data set

Run (tab) Name:	Ann_Opt_G_R1_Metyr1	Ann_Opt_G_R1_Metyr2	Ann_Opt_G_R1_Metyr3	Ann_Opt_G_R1_Metyr4	Ann_Opt_G_R1_Metyr5	
Run Description:	Option G_R1, Reg 419 grid, Site Specific Met (2009)	Option G_R1, Reg 419 grid, Site Specific Met (2010)	Option G_R1, Reg 419 grid, Site Specific Met (2011)	Option G_R1, Reg 419 grid, Site Specific Met (2012)	Option G_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	0.84107	0.99192	0.80633	0.86851	0.8331	**0.99192**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	0.11386	0.12902	0.108	0.11646	0.1128	**0.12902**
B24	0.04733	0.05293	0.04593	0.04748	0.0491	**0.05293**
B25	0.0429	0.0494	0.04094	0.04253	0.04298	**0.0494**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	0.09023	0.10233	0.08688	0.09	0.09208	**0.10233**
FOREHEAR	0.11386	0.12902	0.108	0.11646	0.1128	**0.12902**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option G_R1, Reg 419 grid, Site Specific Met (2009)	Option G_R1, Reg 419 grid, Site Specific Met (2010)	Option G_R1, Reg 419 grid, Site Specific Met (2011)	Option G_R1, Reg 419 grid, Site Specific Met (2012)	Option G_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00084107	0.00099192	0.00080633	0.00086851	0.0008331	**0.000992**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00011386	0.00012902	0.000108	0.00011646	0.0001128	**0.000129**
B24	0.00004733	0.00005293	0.00004593	0.00004748	0.0000491	**5.29E-05**
B25	0.0000429	0.0000494	0.00004094	0.00004253	0.00004298	**4.94E-05**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00009023	0.00010233	0.00008688	0.00009	0.00009208	**0.000102**
FOREHEAR	0.00011386	0.00012902	0.000108	0.00011646	0.0001128	**0.000129**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Appendix M Preferred Pollution Control Combination

LEHDER

Calculation of Hexavalent Chromium Emission Rates
Preferred Pollution Control Combination (as presented in the Action Plan)

Emission Rate Calculations for the Final Preferred Pollution Control Combination (E_R9)

							before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	107 Furnace	105 Furnace	105 Furnace	conventional FH	conventional FH	CFM FH	CFM FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
		2016 Reconfiguration Base Emission Rate (g/s)		1.78E-05	1.78E-05		7.53E-05		3.32E-05		1.19E-06	1.19E-06	2.05E-06	1.19E-06	1.19E-06	2.04E-06	2.04E-06	1.55E-04
		Uncertainty Applied		1.23	1.23		1.55		1.55		1.52	1.52	1.52	1.52	1.52	1.52	1.52	
		2016 Base RC Emission Rate (g/s) with Uncertainty Factors applied		2.18E-05	2.18E-05		1.17E-04		5.14E-05		1.82E-06	1.82E-06	3.12E-06	1.82E-06	1.82E-06	3.10E-06	3.10E-06	2.28E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38 (combined FH Stack)	B08	B10	B32	B33	B34	B35	C79	C80	
E_R9	Reconfiguration + forehearth sections incorporating more accurate combustion control skids and construction of front end superstructures (14) + re-engineering exhaust stacks impacted by reconfiguration (15) Used of documented uncertainty stack configuration for B38 at 28mag	Description of Reduction Component					prototype		NA									
		Individual Reduction Identification #					14				Result of 14	Result of 14		Result of 14	Result of 14			
		Reduction Efficiency		0%	0%		50%			0%	50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency																
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+14+partial 15		2.18E-05	2.18E-05		Exhausted out B38		1.10E-04		9.08E-07	9.08E-07	3.12E-06	9.08E-07	9.08E-07	3.10E-06	3.10E-06	1.66E-04

Explanation of Calculations

Furnace:
The reconfiguration plans include taking the existing furnace (T107) out of service and restarting the T105 furnace. The emission rate for T105 furnace is estimated (conservatively) to be the same as the existing furnace as they will employ similar technologies and the same glass formulation.
However, the emissions will be discharged from two existing (currently out of service) stacks B24 and B25.
The only change to the furnace emission rates is the incorporation of the uncertainty factor (23%) which is calculated using the Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System.

Forehearths:
The reconfiguration plans include removal of approximately half of the existing conventional forehearth which currently exhausts through stack B11 (B11current), therefore the current emission rate is divided by 2 to prior to the application of any reduction efficiencies related to the control option.
There are no planned changes to the CFM forehearth (exhausting through B38current).
An uncertainty factor (55%) is applied to the emission rates from both sections of forehearth. The uncertainty factor is calculated usinghe Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System.
The technology to be implemented as part of this pollution control option (E_R9) is the installation of more accurate combustion control skids and construction of front end superstructures in the remaining conventional forehearth.
Therefore, the reduction efficiency of 50% for the technology is applied only to the emission rate associated with the conventional forehearth (adjusted for downsizing).
After the reconfiguration and implementation of this pollution control combination, all forehearth emissions will be exhausted through a single location at the current B38 stack.

Example Calculation for the changes to the Conventional Forehearth emissions (B11current)

New B11 ER, g/s= (Current B11 forehearth rate, g/s) / 2(for reduction of forehearth area) x (Source Testing uncertainty factor of 1.55)

New B11 ER, g/s= [0.000151 , g/s / 2] x 1.55

New B11 ER, g/s= 1.17E-04

B11 ER after technologies applied = New B11 ER x (1 - reduction efficiency of technologies)

B11 ER after technologies applied = New B11 ER, g/s x (1 - 50%)

B11 ER after technologies applied = 5.84E-05

After Reconfiguration and implementation of the control technologies, all forehearth emissions will be exhausted through a new stack at the B38 location (here referred to above as the "B38 Combined FH" stack

B38 Combined FH stack ER, g/s= [B11 ER after technologies applied] + [B38 current ER x Source testing uncertainty factor of 1.55]

B38 Combined FH stack ER, g/s= 0.0000584 + 0.00005145

B38 Combined FH stack ER, g/s= 1.10E-04

General Ventilation Exhausts:
The reconfiguration plans include removal of approximately half of the existing conventional forehearth which is believed to be the greatest contributor to emissions leaving the facility through most of the general ventilation exhausts.
An uncertainty factor (52%) is applied to all of the general ventilation emission rates. The uncertainty factor is calculated usinghe Methodology outlined in the Alberta Air Monitoring Directive, Chapter 5: Quality System.
Therefore, the emission rates from 5 of the general ventilation exhaust fans are reduced by 50% based on the conventional forehearth downsizing.
The installation of the control technologies on the conventional forehearth is anticipated to reduce the furnace hall emissions by the same reduction efficiency.

Example Calculation for the changes to General Ventilation Source B32

New B32 ER, g/s= (current B32 ER, g/s) / 2 (for reduction of forehearth area) x 1.52 (Source Testing Uncertainty Factor) x (1-reduction efficiency for conventional forehearth technology)

New B32 ER, g/s= 0.00000239 / 2 x 1.52 x (1-0.5)

New B32 ER, g/s= 9.08E-07

RC	Reconfiguration in 2016
RE1	Roof exhausters unchanged by process changes
RE2	Roof exhausters affected by process changes

Calculation of Uncertainty for General Ventilation Sources

	Raw Cr+6	Blank Corrected Cr+6
Source	Concentration	Concentration
	µg/m3	µg/m3
Source B8	0.2781190	0.1751120
Source B10	0.3577441	0.2588797
Source C80	0.2373759	0.1424255

confidence interval =	0.05	95%	
number of samples (n) =	3		
test statistic (t-value) =	4.303	from t-tables.xls	
sample mean (x) =	0.291	(arithmetic mean)	
standard deviation (s) =	0.0612	(standard deviation of a sample using STDEV.S function)	

sample uncertainty is equal to the mean +/- [t-value x standard deviation (s) / Square root of # of samples (n)]

sample uncertainty =	0.291	+/-	0.15

Uncertainty as a percentage	52%

Calculation of Uncertainty for Source B38 (with prototype technology)

Using both Data Sets (August 2013 condition #1 and September 2014 Validated Testing)

Combined Data Sets (values)

35.43	28.42	35.72	12.07	11.90	12.46

confidence interval =	0.05	95%	
number of samples (n) =	6		
test statistic (t-value) =	2.571	from t-tables.xls	
sample mean (x) =	22.7	(arithmetic mean)	
standard deviation (s) =	11.82193863	(standard deviation of a sample using STDEV.S function)	

sample uncertainty is equal to the mean +/- [t-value x standard deviation (s) / Square root of # of samples (n)]

sample uncertainty =	22.7	+/-	12.41

Uncertainty as a percentage 55%

Calculation of Uncertainty for Furnace Source B01

B01 Furnace Data	13-Oct-11	14-Oct-11	14-Oct-11	6-Aug-13	7-Aug-13	7-Aug-13	12-Jun-14	12-Jun-14	12-Jun-14
Hex Cr (ug/s)	37	33	42	46	24	25	38	50	19

only June 2014 data is validated
However, all testing done using same methodology and funace is considered to be very stead state with no technology/process changes

Using all 3 Data Sets

confidence interval =	0.05	95%
number of samples (n) =	9	
test statistic (t-value) =	2.306	from t-tables.xls
sample mean (x) =	34.8	(arithmetic mean)
standard deviation (s) =	10.3682	(standard deviation of a sample using STDEV.S function)

sample uncertainty is equal to the mean +/- [t-value x standard deviation (s) / Square root of # of samples (n)]

sample uncertainty =	34.8	+/-	7.97

Uncertainty as a percentage	23%

APPENDIX CALCULATING UNCERTAINTY OF MEASUREMENT

A number of samples, say n, are collected from a given condition for which measurement uncertainty is to be assessed. The purpose is to express measurement uncertainty in a confidence interval with a certain probability, say 95 per cent. In this instance, the wider the confidence interval, the greater is the measurement uncertainty for the method in question.

For practical reasons, $n = 6$ is considered applicable and the following parameters are to be computed:

$\bar{x} = \sum_{i=1}^{n} x_i \Big/ n$ the sample mean,

$\bar{x}_L = \bar{x} - t_{\alpha/2,n-1} \times s_{\bar{x}}$ the upper confidence limit of the sample mean,

$\bar{x}_U = \bar{x} + t_{\alpha/2,n-1} \times s_{\bar{x}}$ the lower confidence limit of the sample mean,

$s = \sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2 \Big/ (n-1)}$ the sample standard deviation,

$s_{\bar{x}} = s/\sqrt{n}$ the standard deviation of the sample mean.

For 95 % confidence interval ($\alpha = 0.05$) and a sample of n = 6, the test statistic (t-value) is $t_{\alpha/2,n-1} = 2.571$.

The measurement uncertainty is represented by $\bar{x} \pm t_{\alpha/2,n-1} \times s/\sqrt{n}$. This is $\bar{x} \pm 1.05s$ in this case.

As an example: for a sample of 6 observations: $x_1 = 0.61$, $x_2 = 0.95$, $x_3 = 0.91$, $x_4 = 1.16$, $x_5 = 0.72$, $x_6 = 0.59$. The mean is 0.82. The standard deviation s is 0.22. The resulting measurement uncertainty is 0.82 ± 0.23.

As a rough general rule, it is recommended that the minimum sample size be n=6 for an adequate estimation of uncertainty. The larger the sample size, the more precise the estimation in measurement uncertainty.

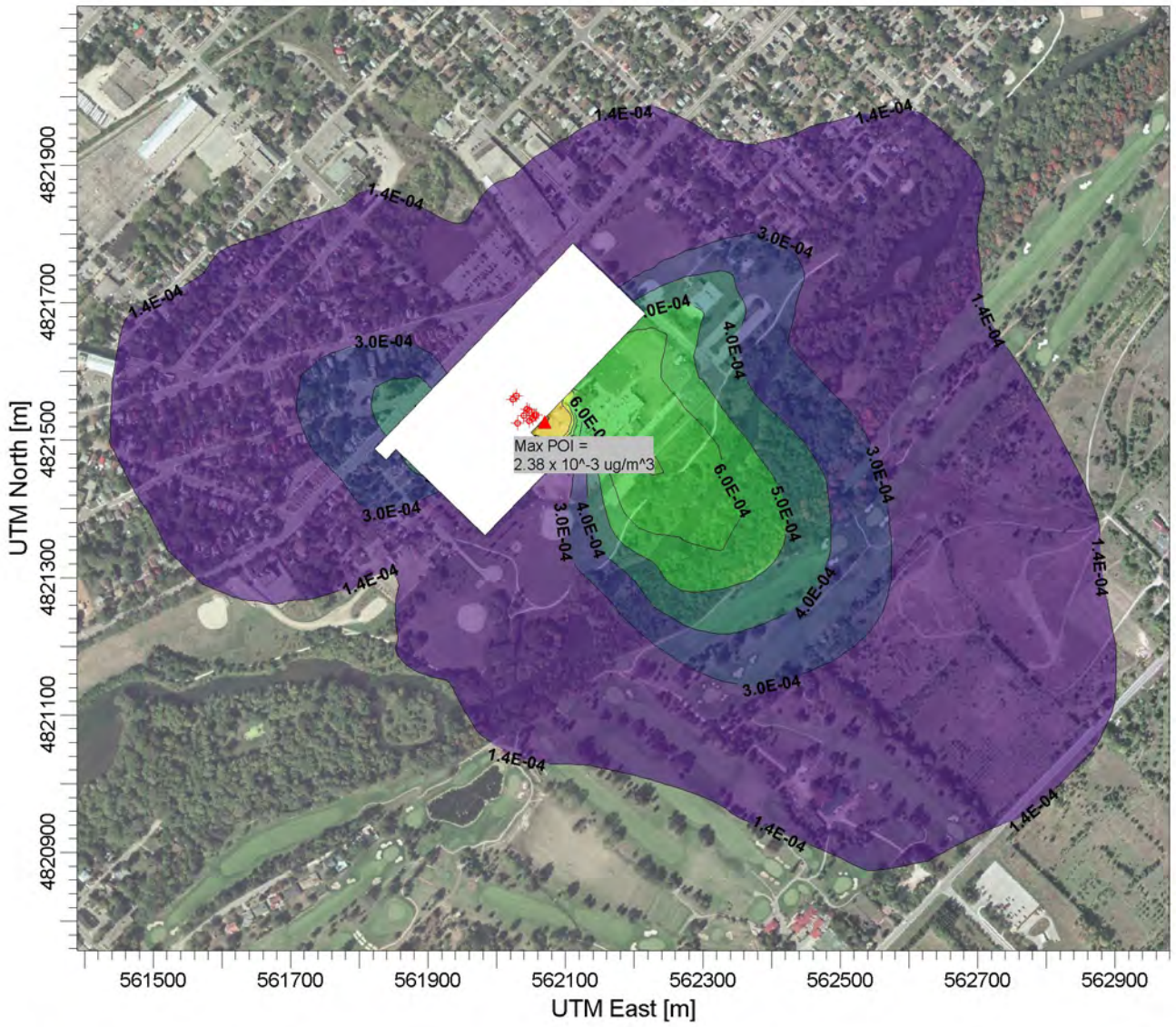
Note: As the sample size changes, the t-value needs to be changed accordingly. The above calculation is appropriate for a sample size of six. For a larger sample size, other values of the test statistic need to be used.

t Table

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										

PROJECT TITLE:

OC Guelph Glass Plant - Annual Average Hexavalent Chromium Concentration
Preferred Pollution Control Combination (ID E_R9) from Technical Benchmarking



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL — MICROGRAMS/M3

Max: 2.4E-03 [MICROGRAMS/M3] at (562063.97, 4821525.92)

1.4E-04 | 3.0E-04 | 4.0E-04 | 5.0E-04 | 6.0E-04 | 8.0E-04 | 9.0E-04 | 1.0E-03 | 2.0E-03 | 2.4E-03

COMMENTS: Reg 419 grid Met Year 2	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **2062**	MODELER: **C.MacKay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,000 0 — 0.3 km	
	MAX: **2.4E-03 MICROGRAMS/M3**	DATE: **3/19/2015**	PROJECT NO.: **144539**

Annual Hexavalent Chromium Results
Preferred Option - Summary of 5 year data set

Run (tab) Name:	Ann_Opt_E_R9_Metyr1	Ann_Opt_E_R9_Metyr2	Ann_Opt_E_R9_Metyr3	Ann_Opt_E_R9_Metyr4	Ann_Opt_E_R9_Metyr5	
Run Description:	Option E_R9, Reg 419 grid, Site Specific Met (2009)	Option E_R9, Reg 419 grid, Site Specific Met (2010)	Option E_R9, Reg 419 grid, Site Specific Met (2011)	Option E_R9, Reg 419 grid, Site Specific Met (2012)	Option E_R9, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	2.11662	2.38471	2.12615	2.19456	2.25161	**2.38471**
B38	1.10762	1.21329	1.13902	1.21907	1.30165	**1.30165**
B10	0.05166	0.05303	0.05319	0.05381	0.05314	**0.05381**
B32	0.10545	0.11196	0.104	0.10709	0.10604	**0.11196**
B34	0.07842	0.08919	0.07613	0.08062	0.07885	**0.08919**
B35	0.0783	0.09035	0.07616	0.08169	0.07834	**0.09035**
C79	0.1094	0.14398	0.10188	0.11608	0.10601	**0.14398**
C80	0.10431	0.1442	0.0961	0.11224	0.09545	**0.1442**
B24	0.25232	0.2487	0.25864	0.24412	0.26899	**0.26899**
B25	0.17283	0.18459	0.17381	0.16453	0.18086	**0.18459**
B33	0.11544	0.14794	0.10557	0.115	0.10744	**0.14794**
FURNACE	0.42515	0.4333	0.43245	0.40865	0.44985	**0.44985**
FOREHEAR	1.10762	1.21329	1.13902	1.21907	1.30165	**1.30165**
GENEXHTS	0.62718	0.76247	0.59689	0.6495	0.61285	**0.76247**

Run Description:	Option E_R9, Reg 419 grid, Site Specific Met (2009)	Option E_R9, Reg 419 grid, Site Specific Met (2010)	Option E_R9, Reg 419 grid, Site Specific Met (2011)	Option E_R9, Reg 419 grid, Site Specific Met (2012)	Option E_R9, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00211662	0.00238471	0.00212615	0.00219456	0.00225161	**0.002385**
B38	0.00110762	0.00121329	0.00113902	0.00121907	0.00130165	**0.001302**
B10	0.00005166	0.00005303	0.00005319	0.00005381	0.00005314	**5.38E-05**
B32	0.00010545	0.00011196	0.000104	0.00010709	0.00010604	**0.000112**
B34	0.00007842	0.00008919	0.00007613	0.00008062	0.00007885	**8.92E-05**
B35	0.0000783	0.00009035	0.00007616	0.00008169	0.00007834	**9.04E-05**
C79	0.0001094	0.00014398	0.00010188	0.00011608	0.00010601	**0.000144**
C80	0.00010431	0.0001442	0.0000961	0.00011224	0.00009545	**0.000144**
B24	0.00025232	0.0002487	0.00025864	0.00024412	0.00026899	**0.000269**
B25	0.00017283	0.00018459	0.00017381	0.00016453	0.00018086	**0.000185**
B33	0.00011544	0.00014794	0.00010557	0.000115	0.00010744	**0.000148**
FURNACE	0.00042515	0.0004333	0.00043245	0.00040865	0.00044985	**0.00045**
FOREHEAR	0.00110762	0.00121329	0.00113902	0.00121907	0.00130165	**0.001302**
GENEXHTS	0.00062718	0.00076247	0.00059689	0.0006495	0.00061285	**0.000762**

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	9.08E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	9.08E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	9.08E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	9.08E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	3.10E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	3.10E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	28.00	0.00011	379.15	5.43	0.75
		final parameters provided to OC							
POINT	B24	562052.59	4821531.65	312.00	31.43	0.00002	597.00	15.00	0.33
		final parameters provided to OC							
POINT	B25	562057.67	4821536.90	312.00	31.43	0.00002	597.00	15.00	0.33
		final parameters provided to OC							
POINT	B33	562055.21	4821536.35	312.00	20.00	3.12E-6	321.90	30.00	0.79
		B33J uncapped, existing loc, ht=25, V=30m/s							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                4 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model =   4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_E_R9_Metyr2.sv1
**File for Summary of Results: Ann_Opt_E_R9_Metyr2.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   02/23/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_E_R9_Metyr2   ***   07:06:26
                                                                                                                    PAGE   2

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                    (1=YES; 0=NO)

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METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010   1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC   Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.:   61430   Upper air station no.:   14733
Name: UNKNOWN   Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009   Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	NETWORK GRID-ID
B10	1ST HIGHEST VALUE IS	0.05303	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.05303	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.03800	562076.93,	4821485.66,	310.19,	310.19, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.03800	562076.93,	4821485.66,	310.19,	310.19, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.03586	562070.22,	4821492.13,	310.40,	310.40, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.03586	562070.22,	4821492.13,	310.40,	310.40, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.03541	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.03541	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.03486	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.03486	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
B24	1ST HIGHEST VALUE IS	0.24870	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.24870	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.23024	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.23024	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.21928	562070.91,	4821533.11,	311.00,	311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.21928	562070.91,	4821533.11,	311.00,	311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.18708	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.18708	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.17240	562085.76,	4821532.01,	311.00,	311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.16245	562077.84,	4821540.29,	311.01,	311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS	0.18459	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.18459	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.15927	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.15927	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.15868	562070.91,	4821533.11,	311.00,	311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.15868	562070.91,	4821533.11,	311.00,	311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.13006	562085.76,	4821532.01,	311.00,	311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.12033	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.12033	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.11479	562065.76,	4821512.01,	311.00,	311.00, 0.00)	DC	
B32	1ST HIGHEST VALUE IS	0.11196	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.11196	562063.97,	4821525.92,	311.00,	311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.10100	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.10100	562057.04,	4821518.74,	311.00,	311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.09109	562070.91,	4821533.11,	311.00,	311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.09109	562070.91,	4821533.11,	311.00,	311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.08363	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.08363	562050.10,	4821511.55,	311.00,	311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.05866	562085.76,	4821512.01,	311.00,	311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.05805	562065.76,	4821512.01,	311.00,	311.00, 0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID

B33	1ST HIGHEST VALUE IS	0.14794 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.14794 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.12244 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.12244 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.11999 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.11040 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.11040 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.11031 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06974 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06889 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
B34	1ST HIGHEST VALUE IS	0.08919 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08919 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07666 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07666 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.07406 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.07406 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06139 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06139 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.05589 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.05486 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.09035 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.09035 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07545 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07545 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.07161 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.07161 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06046 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.05898 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.05420 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04152 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	1.21329 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.21329 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	1.18894 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	1.18894 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.97601 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.94370 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
	7TH HIGHEST VALUE IS	0.94370 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
	8TH HIGHEST VALUE IS	0.87345 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.87345 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.77779 AT (	562084.78,	4821547.47,	311.25,	311.25,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C79	1ST HIGHEST VALUE IS	0.14398 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.14398 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.12547 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.12092 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.12092 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.11452 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.10708 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.10708 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08593 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.08321 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

C80	1ST HIGHEST VALUE IS	0.14420	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.14420	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.14226	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.13260	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.13260	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.11474	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.09768	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.09768	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.09222	AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.08340	AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
FURNACE	1ST HIGHEST VALUE IS	0.43330	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.43330	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.38951	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.38951	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.37796	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.37796	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.30741	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.30741	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.30246	AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.26144	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
FOREHEAR	1ST HIGHEST VALUE IS	1.21329	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.21329	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	1.18894	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	1.18894	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.97601	AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.94370	AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
	7TH HIGHEST VALUE IS	0.94370	AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
	8TH HIGHEST VALUE IS	0.87345	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.87345	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.77779	AT (	562084.78,	4821547.47,	311.25,	311.25,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

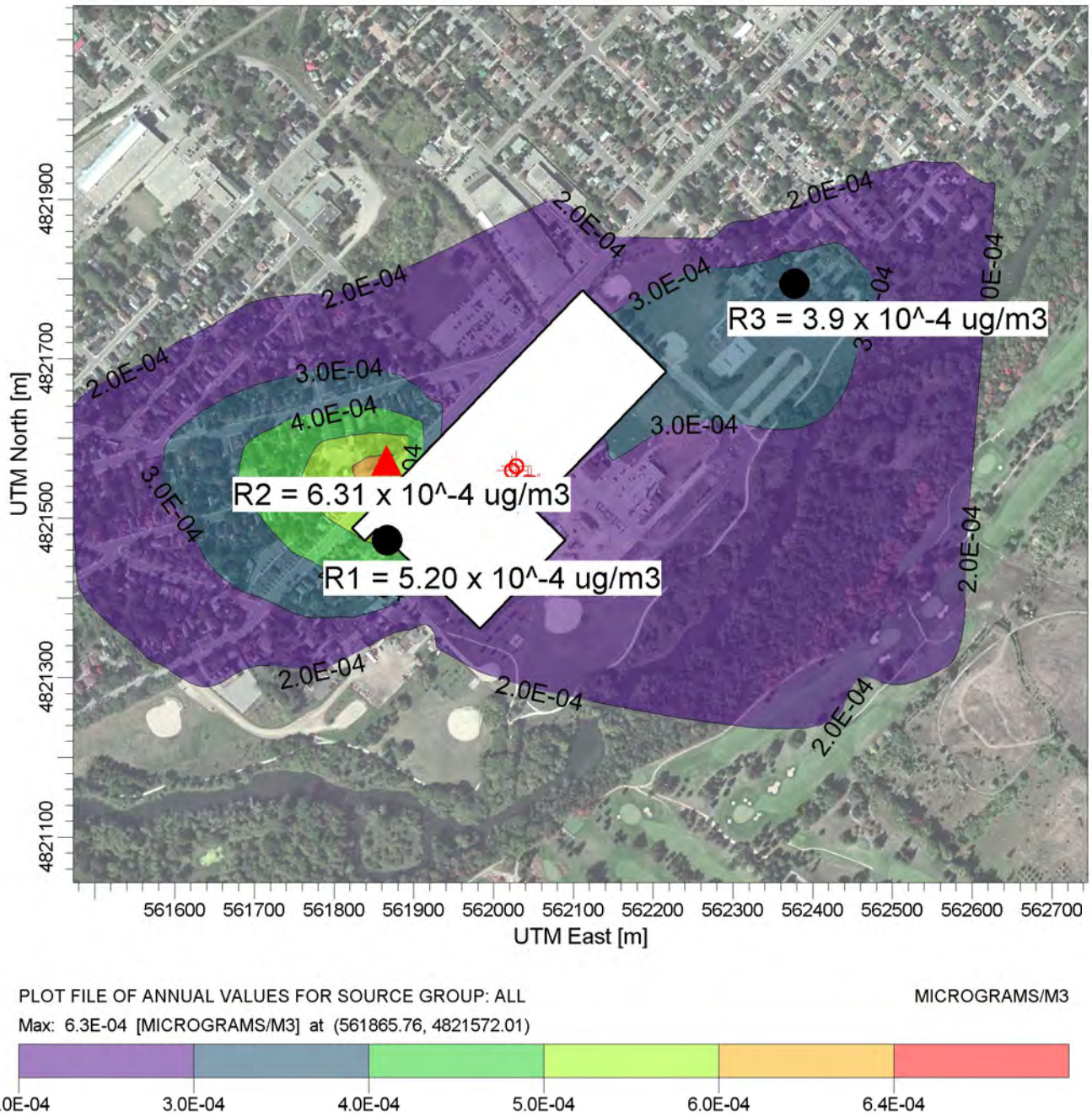
GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
GENEXHTS	1ST HIGHEST VALUE IS 0.76247 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.76247 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.64680 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.64680 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.60412 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.60412 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.56747 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.53483 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.43243 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.43243 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
ALL	1ST HIGHEST VALUE IS 2.38471 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 2.38471 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 2.19537 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 2.19537 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 1.90976 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 1.90976 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 1.67730 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 1.52625 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)		DC	
	9TH HIGHEST VALUE IS 1.52625 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)		DC	
	10TH HIGHEST VALUE IS 1.51423 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	

2.3847 ng/m3 = 0.0023847 ug/m3

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/23/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_E_R9_Metyr2                                                ***        07:06:26
                                                                                                                   PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

PROJECT TITLE:

OC Guelph Glass Plant -Sensitive Receptor Assessment
Preferred Pollution Control Combination (ID E_R9) from Technological Benchmarking



PLOT FILE OF ANNUAL VALUES FOR SOURCE GROUP: ALL — MICROGRAMS/M3

Max: 6.3E-04 [MICROGRAMS/M3] at (561865.76, 4821572.01)

2.0E-04 3.0E-04 4.0E-04 5.0E-04 6.0E-04 6.4E-04

COMMENTS: Sensitive Receptor Grid Met Year 1 Red Triangle = Max POI Concentration Black Circle = Concentration at the location	SOURCES: **10**	COMPANY NAME: **Owens Corning Guelph Glass Plant**	
	RECEPTORS: **801**	MODELER: **C. Mackay, LEHDER**	LEHDER Excellence in Industrial Air Quality Services
	OUTPUT TYPE: **Concentration**	SCALE: 1:8,000 0 0.3 km	
	MAX: **6.3E-04 MICROGRAMS/M3**	DATE: **3/23/2015**	PROJECT NO.: **144539**

Annual Hexavalent Chromium concentrations

Technical Benchmarking - Preferred Option E_R9 - Sensitive Receptor Modeling - 5 year data set

Run (tab) Name:	Ann_Opt_E_R9_AllSR_R1_yr1	Ann_Opt_E_R9_AllSR_R1_yr2	Ann_Opt_E_R9_AllSR_R1_yr3	Ann_Opt_E_R9_AllSR_R1_yr4	Ann_Opt_E_R9_SRAll_R1_yr5	
Run Description:	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2009)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2010)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2011)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2012)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	0.63103	0.4272	0.58772	0.49976	0.58243	**0.63103**
B38	0.42566	0.28611	0.39354	0.33433	0.38774	**0.42566**
B10	0.00459	0.00355	0.00471	0.004	0.00468	**0.00471**
B32	0.00356	0.00248	0.00321	0.00284	0.00317	**0.00356**
B34	0.00356	0.00246	0.00322	0.00264	0.00296	**0.00356**
B35	0.00351	0.00284	0.0036	0.00285	0.00312	**0.0036**
C79	0.01508	0.01326	0.01519	0.01207	0.0122	**0.01519**
C80	0.01266	0.01128	0.01267	0.01153	0.01259	**0.01267**
B24	0.08456	0.05764	0.07746	0.0675	0.07923	**0.08456**
B25	0.07617	0.05175	0.07043	0.05924	0.07064	**0.07617**
B33	0.01128	0.00812	0.01061	0.00924	0.00961	**0.01128**
FURNACE	0.16073	0.10939	0.14789	0.12652	0.14987	**0.16073**
FOREHEAR	0.42566	0.28611	0.39354	0.33433	0.38774	**0.42566**
GENEXHTS	0.05004	0.04062	0.04918	0.04254	0.04482	**0.05004**

Run Description:	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2009)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2010)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2011)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2012)	Option E_R9_AllSR_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00063103	0.0004272	0.00058772	0.00049976	0.00058243	**0.000631**
B38	0.00042566	0.00028611	0.00039354	0.00033433	0.00038774	**0.000426**
B10	0.00000459	0.00000355	0.00000471	0.000004	0.00000468	**4.71E-06**
B32	0.00000356	0.00000248	0.00000321	0.00000284	0.00000317	**3.56E-06**
B34	0.00000356	0.00000246	0.00000322	0.00000264	0.00000296	**3.56E-06**
B35	0.00000351	0.00000284	0.0000036	0.00000285	0.00000312	**3.6E-06**
C79	0.00001508	0.00001326	0.00001519	0.00001207	0.0000122	**1.52E-05**
C80	0.00001266	0.00001128	0.00001267	0.00001153	0.00001259	**1.27E-05**
B24	0.00008456	0.00005764	0.00007746	0.0000675	0.00007923	**8.46E-05**
B25	0.00007617	0.00005175	0.00007043	0.00005924	0.00007064	**7.62E-05**
B33	0.00001128	0.00000812	0.00001061	0.00000924	0.00000961	**1.13E-05**
FURNACE	0.00016073	0.00010939	0.00014789	0.00012652	0.00014987	**0.000161**
FOREHEAR	0.00042566	0.00028611	0.00039354	0.00033433	0.00038774	**0.000426**
GENEXHTS	0.00005004	0.00004062	0.00004918	0.00004254	0.00004482	**5E-05**

Appendix N Technical Benchmarking Modeling – All Other Scenarios

LEHDER

Technology Benchmarking Appendix

Assessment of All Technically Feasible Options and Combinations

Explanation of Reduction Efficiencies for Technically Feasible Options

Technology	Estimated Reduction Efficiency	Rationale
Dust collector/baghouse (DC)	95%	Reduction efficiency is based on Owens Corning engineering estimates taking into account past experience with similar devices at fiberglass insulation facilities, low concentration profile of the exhaust stream and predicted particle size.
Dry Electrostatic Precipitator (DEP)	95%	
Wet Electrostatic Precipitator (WEP)	95%	
Spray Chamber Scrubber	20%	Reduction efficiency is based on Owens Corning engineering estimates taking into account past experience with similar devices at fiberglass insulation facilities, low concentration profile of the exhaust stream and predicted particle size.
Cyclone Spray Chamber	20%	
Low or High Pressure Venturi Scrubber	20%	
Substituting with Low Sublimation Chromium refractory	10%	Reduction efficiency is a rough estimate based on limited information available from source testing at the Guelph facility. This technology has been considered not technical feasible but included for the purposes of completeness.
Conversion to air/gas combustion	86%	Reduction efficiency is based on a single source testing data point at another similar facility.
Use of more accurate combustion control skids with constructing front end superstructures (two technologies must be combined to be effective)	50%	Reduction efficiency is based on assessment of source testing programs at various production rates and process parameters.
Re-engineering the exhaust points to overcome site specific dispersion challenges	65-90%	Reduction efficiency is based on the assessment of annual average dispersion factors for technically feasible changes to stack configurations for sources included in the reconfiguration.

The following sections of this appendix are organized by each Pollution Control Combination in the order of ranking. Each appendix contains a summary of the emission rate calculations for each source as well as the modeling inputs and results.

The Default Pollution Control Combination (combination ID G_R1) is presented in Appendix L and the Preferred Pollution Control Combination (combination ID E_R9) is presented in Appendix M.

Assessment Results of Technically Feasible Pollution Control Strategies

Combination ID	Polution Control Strategy Description	Ranking	Overall Percent Reduction
G_R1 (default)	Electrostatic Precipitator (DEP/WEP) or Dust Collector on furnace and forehearth stacks combined with the use of Low Sublimation Chromium (LSC) refractory and conversion of the forehearths to air/gas combustion	1	95.23%
M_R1	Electrostatic Precipitator (DEP/WEP) or Dust Collector on furnace and forehearth stacks combined with conversion of the forehearths to air/gas combustion	2	95.16%
H_R1	Electrostatic Precipitator (DEP/WEP) or Dust Collector on furnace and forehearth stacks combined with the use of LSC refractory and the installation of more accurate combustion controls in combination with front end superstructures to prevent air ingress	3	94%
N_R1	Electrostatic Precipitator (DEP/WEP) or Dust Collector on furnace and forehearth stacks combined with incorporating more accurate combustion control skids and construction of frontend superstructures	4	93%
V_R1	Electrostatic Precipitator (DEP/WEP) or Dust Collector on furnace and forehearth stacks	5	91%
E_R9 (preferred)	Incorporating more accurate combustion control skids and construction of front end superstructures and re-engineering exhaust stacks impacted by reconfiguration	6	88.5%
I_R3	Scrubber on forehearth stack, use of Low Sublimation Chromium (LSC) refractory and forehearth conversion to air/gas combustion	7	77%
O_R2	Scrubber on forehearth stack and forehearth conversion to air/gas combustion	8	75%
S_R1	Forehearth conversion to air/gas combustion	9	73%
J_R2	Scrubber on forehearth stack, use of Low Sublimation Chromium (LSC) refractory and incorporating more accurate combustion control skids and construction of front end superstructures	10	50%
P_R2	Scrubber on forehearth stack and incorporating more accurate combustion control skids and construction of front end superstructures	11	48%
T_R1	Incorporating more accurate combustion control skids and construction of front end superstructures	12	39%
W_R2	Scrubber on forehearth stack	13	27%

Scenario: M_R1

Emission Rate Calculations for Modeling

							before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
M	Facility reconfiguration (RC) + Electrostatic Precipitator (DEP) or WEP or DC for hot sources (1, 2 or 3) + forehearth conversion to air/gas combustion (12)	Description of Reduction Component		DEP/WEP/DC	DEP/WEP/DC				Air/Gas+ (DEP/WEP/DC)									
		Individual Reduction Description		1,2 or 3	1,2 or 3				1,2or3 and 12		partial of 12	partial of 12		partial of 12	partial of 12			
		Reduction Efficiency		95%	95%				95%		50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency							86%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(1,2 or 3)+12		1.02E-06	1.02E-06				1.18E-06		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.30E-05
	Explanation of calculation for B38 :	It is not appropriate to apply the air/gas reduction of 86% to the current B38 emission rate since it is using a different technology that would be removed before installing air/gas combustion.																
		Therefore, for emission reduction estimation purposes, the B38 reconfiguration ER is assumed to be identical to that of the B11 reconfiguration emission rate.																

Annual Hexavalent Chromium Results
Technical Benchmarking Option M - 5 year data set

Run (tab) Name:	Ann_Otp_M_R1_Metyr1	Ann_Opt_M_R1_Metyr2	Ann_Opt_M_R1_Metyr3	Ann_Opt_M_R1_Metyr4	Ann_Opt_M_R1_Metyr5	
Run Description:	Option M_R1, Reg 419 grid, Site Specific Met (2009)	Option M_R1, Reg 419 grid, Site Specific Met (2010)	Option M_R1, Reg 419 grid, Site Specific Met (2011)	Option M_R1, Reg 419 grid, Site Specific Met (2012)	Option M_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	0.85372	1.00625	0.81832	0.88145	0.84563	**1.00625**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	0.1265	0.14336	0.12	0.12939	0.12533	**0.14336**
B24	0.04733	0.05293	0.04593	0.04748	0.0491	**0.05293**
B25	0.0429	0.0494	0.04094	0.04253	0.04298	**0.0494**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	0.09023	0.10233	0.08688	0.09	0.09208	**0.10233**
FOREHEAR	0.1265	0.14336	0.12	0.12939	0.12533	**0.14336**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option M_R1, Reg 419 grid, Site Specific Met (2009)	Option M_R1, Reg 419 grid, Site Specific Met (2010)	Option M_R1, Reg 419 grid, Site Specific Met (2011)	Option M_R1, Reg 419 grid, Site Specific Met (2012)	Option M_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00085372	0.00100625	0.00081832	0.00088145	0.00084563	**0.001006**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.0001265	0.00014336	0.00012	0.00012939	0.00012533	**0.000143**
B24	0.00004733	0.00005293	0.00004593	0.00004748	0.0000491	**5.29E-05**
B25	0.0000429	0.0000494	0.00004094	0.00004253	0.00004298	**4.94E-05**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00009023	0.00010233	0.00008688	0.00009	0.00009208	**0.000102**
FOREHEAR	0.00009023	0.00014336	0.00012	0.00012939	0.00012533	**0.000143**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	1.18E-6	379.15	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_M_R1_Metyr2 *** 13:50:45

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_M_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_M_R1_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_M_R1_Metyr2 *** 13:50:45

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_M_R1_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.07194 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.06620 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.06392 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04896 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	0.14336 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.14336 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.12316 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.12316 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.10815 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	0.10815 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.09871 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.09647 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08684 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.07142 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.03650 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.03461 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.03175 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.02648 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)		DC	
B25	1ST HIGHEST VALUE IS 0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	

	5TH HIGHEST VALUE IS	0.03983	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.03983	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.03545	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.03445	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02931	AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02528	AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.08470	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08470	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07642	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07642	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06892	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.06892	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06327	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06327	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04438	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04392	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS 0.06748	AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.06748	AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.05800	AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.05800	AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.05603	AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.05603	AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.04644	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.04644	AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.04229	AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.04150	AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
B35	1ST HIGHEST VALUE IS 0.06836	AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.06836	AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.05709	AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	0.14336 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.14336 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.12316 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.12316 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10815 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.10815 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.09871 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.09647 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08684 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.07142 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	1.00625 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.00625 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

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         3RD HIGHEST VALUE IS       0.84133 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       0.84133 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       0.81678 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       0.81678 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       0.71479 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       0.67574 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       0.55878 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       0.54778 AT (  562050.10,  4821511.55,   311.00,   311.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_M_R1_Metyr2                                               ***       13:50:45
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


    ********   WARNING MESSAGES   ********
              ***  NONE  ***
```

Scenario: H_R1

Emission Rate Calculations for Modeling

						before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
H	Facility reconfiguration (RC) + Electrostatic Precipitator (DEP) or WEP or DC for hot sources (1, 2 or 3) + substituting LSC refractory in the forehearth (11) + incorporating more accurate combustion control skids and construction of front end superstructures (14)	Description of Reduction Component		DEP/WEP/DC	DEP/WEP/DC				DEP/WEP/DC + LSC+ partial prototype									
		Individual Reduction Description		1,2 or 3	1,2 or 3				(1,2, or 3)+11+14		Result of 14	Result of 14		Result of 14	Result of 14			
		Reduction Efficiency 1		95%	95%				95%	0%	50%	50%	0%	50%	50%	0%	0%	
		Reduction Efficiency 2							10%									
		Reduction Efficiency 3							50%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(1,2 or 3)+11+14		1.02E-06	1.02E-06				3.86E-06		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.57E-05
	Explanation of calculation for B38 :	The 50% reduction efficiency for control option #11 and #14 only applies to the B11 reconfigured emission rate, not the B38 current emission rate since these technologies already exist on that portion of (CFM) forehearth.																

Annual Hexavalent Chromium Results
Technical Benchmarking Option H - 5 year data set

Run (tab) Name:	Ann_Opt_H_R1_Metyr1	Ann_Opt_H_R1_Metyr2	Ann_Opt_H_R1_Metyr3	Ann_Opt_H_R1_Metyr4	Ann_Opt_H_R1_Metyr5	
Run Description:	Option H_R1, Reg 419 grid, Site Specific Met (2009)	Option H_R1, Reg 419 grid, Site Specific Met (2010)	Option H_R1, Reg 419 grid, Site Specific Met (2011)	Option H_R1, Reg 419 grid, Site Specific Met (2012)	Option H_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	1.14159	1.33256	1.09137	1.17591	1.13083	**1.33256**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	0.41437	0.46967	0.39305	0.42386	0.41052	**0.46967**
B24	0.04733	0.05293	0.04593	0.04748	0.0491	**0.05293**
B25	0.0429	0.0494	0.04094	0.04253	0.04298	**0.0494**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	0.09023	0.10233	0.08688	0.09	0.09208	**0.10233**
FOREHEAR	0.41437	0.46967	0.39305	0.42386	0.41052	**0.46967**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option H_R1, Reg 419 grid, Site Specific Met (2009)	Option H_R1, Reg 419 grid, Site Specific Met (2010)	Option H_R1, Reg 419 grid, Site Specific Met (2011)	Option H_R1, Reg 419 grid, Site Specific Met (2012)	Option H_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00114159	0.00133256	0.00109137	0.00117591	0.00113083	**0.001333**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00041437	0.00046967	0.00039305	0.00042386	0.00041052	**0.00047**
B24	0.00004733	0.00005293	0.00004593	0.00004748	0.0000491	**5.29E-05**
B25	0.0000429	0.0000494	0.00004094	0.00004253	0.00004298	**4.94E-05**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00009023	0.00010233	0.00008688	0.00009	0.00009208	**0.000102**
FOREHEAR	0.00041437	0.00046967	0.00039305	0.00042386	0.00041052	**0.00047**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	3.86E-6	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_H_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_H_R1_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_H_R1_Metyr2 *** 14:30:24

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_H_R1_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.07194 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.06620 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.06392 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04896 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	0.46967 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.46967 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.40347 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.40347 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.35431 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	0.35431 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.32344 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.31606 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.28446 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.23396 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 0.05293 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.05293 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.04613 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.04613 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.04269 AT (	562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.04269 AT (	562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.03650 AT (	562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.03461 AT (	562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.03175 AT (	562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.02648 AT (	562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS 0.04940 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.04940 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.04009 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.04009 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	5TH HIGHEST VALUE IS	0.03983	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.03983	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.03545	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.03445	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02931	AT	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02528	AT	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.08470	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08470	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07642	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07642	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06892	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.06892	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06327	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06327	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04438	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04392	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC		RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06748	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05800	AT (562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05800	AT (562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05603	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05603	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04644	AT (562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04644	AT (562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04229	AT (562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04150	AT (562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.06836	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06836	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05709	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	0.46967 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.46967 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.40347 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.40347 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.35431 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.35431 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.32344 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.31606 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.28446 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.23396 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	1.33256 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.33256 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

```
         3RD HIGHEST VALUE IS       1.09710 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       1.09710 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       1.08749 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       1.08749 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       0.93439 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       0.90047 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       0.75640 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       0.66782 AT (  562050.10,  4821511.55,   311.00,   311.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_H_R1_Metyr2                                               ***       14:30:24
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

Scenario: N_R1

Emission Rate Calculations for Modeling

						before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
N	Facility reconfiguration (RC) + Electrostatic Precipitator (DEP) or WEP or DC for hot sources (1, 2 or 3) + incorporating more accurate combustion control skids and construction of front end superstructures (14)	Description of Reduction Component		DEP/WEP/DC	DEP/WEP/DC				DEP/WEP/DC + partial prototype									
		Individual Reduction Description		1,2 or 3	1,2 or 3				(1,2,or 3) and 14		Result of 14	Result of 14		Result of 14	Result of 14			
		Reduction Efficiency		95%	95%				95%	0%	50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency							50%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(1,2 or 3)+14		1.02E-06	1.02E-06				4.07E-06		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.59E-05
	Explanation of calculation for B38 :	The 50% reduction efficiency for control option #14 only applies to the B11 reconfigured emission rate, not the B38 current emission rate since the technology already exists on that portion of CFM forehearth.																

Annual Hexavalent Chromium Results
Technical Benchmarking Option N - 5 year data set

Run (tab) Name:	Ann_Otp_N_R1_Metyr1	Ann_Opt_N_R1_Metyr2	Ann_Opt_N_R1_Metyr3	Ann_Opt_N_R1_Metyr4	Ann_Opt_N_R1_Metyr5	
Run Description:	Option N_R1, Reg 419 grid, Site Specific Met (2009)	Option N_R1, Reg 419 grid, Site Specific Met (2010)	Option N_R1, Reg 419 grid, Site Specific Met (2011)	Option N_R1, Reg 419 grid, Site Specific Met (2012)	Option N_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	1.16484	1.35892	1.11343	1.1997	1.15386	**1.35892**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	0.43762	0.49602	0.4151	0.44765	0.43356	**0.49602**
B24	0.04733	0.05293	0.04593	0.04748	0.0491	**0.05293**
B25	0.0429	0.0494	0.04094	0.04253	0.04298	**0.0494**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	0.09023	0.10233	0.08688	0.09	0.09208	**0.10233**
FOREHEAR	0.43762	0.49602	0.4151	0.44765	0.43356	**0.49602**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option N_R1, Reg 419 grid, Site Specific Met (2009)	Option N_R1, Reg 419 grid, Site Specific Met (2010)	Option N_R1, Reg 419 grid, Site Specific Met (2011)	Option N_R1, Reg 419 grid, Site Specific Met (2012)	Option N_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00116484	0.00135892	0.00111343	0.0011997	0.00115386	**0.001359**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00043762	0.00049602	0.0004151	0.00044765	0.00043356	**0.000496**
B24	0.00004733	0.00005293	0.00004593	0.00004748	0.0000491	**5.29E-05**
B25	0.0000429	0.0000494	0.00004094	0.00004253	0.00004298	**4.94E-05**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00009023	0.00010233	0.00008688	0.00009	0.00009208	**0.000102**
FOREHEAR	0.00043762	0.00049602	0.0004151	0.00044765	0.00043356	**0.000496**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

AERMOD

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	4.07E-6	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_N_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_N_R1_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_N_R1_Metyr2 *** 13:15:20

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_N_R1_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.07194 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.06620 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.06392 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04896 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	0.49602 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.49602 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.42612 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.42612 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.37419 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	0.37419 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.34159 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.33380 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.30042 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.24709 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS	0.05293 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.05293 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.04613 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.04613 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.04269 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.04269 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.03650 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.03461 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.03175 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02648 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B25	1ST HIGHEST VALUE IS	0.04940 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04940 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.04009 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.04009 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC

	5TH HIGHEST VALUE IS	0.03983	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.03983	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.03545	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.03445	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02931	AT	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02528	AT	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.08470	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08470	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07642	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07642	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06892	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.06892	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06327	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06327	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04438	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04392	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC		RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06748	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05800	AT (562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05800	AT (562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05603	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05603	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04644	AT (562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04644	AT (562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04229	AT (562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04150	AT (562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.06836	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06836	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05709	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	0.49602 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.49602 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.42612 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.42612 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.37419 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.37419 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.34159 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.33380 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.30042 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.24709 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	1.35892 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.35892 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

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         3RD HIGHEST VALUE IS       1.11974 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       1.11974 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       1.10737 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       1.10737 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       0.95212 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       0.91862 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       0.77237 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       0.67751 AT (  562050.10,  4821511.55,   311.00,   311.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_N_R1_Metyr2                                                ***       13:15:20
                                                                                                                  PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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Scenario: V_R1

Emission Rate Calculations for Modeling

							before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
V	Facility reconfiguration (RC) + Electrostatic Precipitator (DEP) or WEP or DC for hot sources (1, 2 or 3)	Description of Reduction Component		DEP/WEP/DC	DEP/WEP/DC				DEP/WEP/DC +									
		Individual Reduction Description		1,2 or 3	1,2 or 3				(1,2,or 3)									
		Reduction Efficiency		95%	95%				95%	0%	0%	0%	0%	0%	0%	0%	0%	
		Additional Reduction Efficiency																
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(1,2,or 3)		1.02E-06	1.02E-06				6.24E-06		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	2.08E-05

Annual Hexavalent Chromium Results
Technology Benchmarking Option V - 5 year data set

Run (tab) Name:	Ann_Opt_V_R1_Metyr1	Ann_Opt_V_R1_Metyr2	Ann_Opt_V_R1_Metyr3	Ann_Opt_V_R1_Metyr4	Ann_Opt_V_R1_Metyr5	
Run Description:	Option V_R1, Reg 419 grid, Site Specific Met (2009)	Option V_R1, Reg 419 grid, Site Specific Met (2010)	Option V_R1, Reg 419 grid, Site Specific Met (2011)	Option V_R1, Reg 419 grid, Site Specific Met (2012)	Option V_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	1.6227	1.86906	1.5558	1.66901	1.61404	**1.86906**
B10	0.07817	0.08024	0.08048	0.08142	0.0804	**0.08142**
B32	0.15957	0.16941	0.15737	0.16204	0.16045	**0.16941**
B34	0.11866	0.13496	0.11519	0.12199	0.11932	**0.13496**
B35	0.11847	0.13671	0.11524	0.12361	0.11854	**0.13671**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	0.66999	0.75925	0.63554	0.68531	0.66377	**0.75925**
B24	0.04733	0.05293	0.04593	0.04748	0.0491	**0.05293**
B25	0.0429	0.0494	0.04094	0.04253	0.04298	**0.0494**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	0.09023	0.10233	0.08688	0.09	0.09208	**0.10233**
FOREHEAR	0.66999	0.75925	0.63554	0.68531	0.66377	**0.75925**
GENEXHTS	0.86248	1.00748	0.83338	0.8937	0.85819	**1.00748**

Run Description:	Option V_R1, Reg 419 grid, Site Specific Met (2009)	Option V_R1, Reg 419 grid, Site Specific Met (2010)	Option V_R1, Reg 419 grid, Site Specific Met (2011)	Option V_R1, Reg 419 grid, Site Specific Met (2012)	Option V_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.0016227	0.00186906	0.0015558	0.00166901	0.00161404	**0.001869**
B10	0.00007817	0.00008024	0.00008048	0.00008142	0.0000804	**8.14E-05**
B32	0.00015957	0.00016941	0.00015737	0.00016204	0.00016045	**0.000169**
B34	0.00011866	0.00013496	0.00011519	0.00012199	0.00011932	**0.000135**
B35	0.00011847	0.00013671	0.00011524	0.00012361	0.00011854	**0.000137**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00066999	0.00075925	0.00063554	0.00068531	0.00066377	**0.000759**
B24	0.00004733	0.00005293	0.00004593	0.00004748	0.0000491	**5.29E-05**
B25	0.0000429	0.0000494	0.00004094	0.00004253	0.00004298	**4.94E-05**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00009023	0.00010233	0.00008688	0.00009	0.00009208	**0.000102**
FOREHEAR	0.00066999	0.00075925	0.00063554	0.00068531	0.00066377	**0.000759**
GENEXHTS	0.00086248	0.00100748	0.00083338	0.0008937	0.00085819	**0.001007**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	1.37E-6	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	1.37E-6	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	1.37E-6	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	1.37E-6	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	6.24E-6	379.15	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	1.02E-6	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

 **MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
 -

 **Model Is Setup For Calculation of Average CONCentration Values.

   -- DEPOSITION LOGIC --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION. DRYDPLT = F
 **Model Uses NO WET DEPLETION. WETDPLT = F

 **Model Uses RURAL Dispersion Only.

 **Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of: HCR

 **Model Calculates ANNUAL Averages Only

 **This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                  Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                  Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_V_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_V_R1_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_V_R1_Metyr2 *** 11:15:59

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_V_R1_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.10233 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.08622 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.08252 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.07194 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.06620 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.06392 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04896 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	0.75925 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.75925 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.65228 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.65228 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.57278 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	0.57278 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.52279 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51091 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.45991 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.37827 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	1.00748 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.00748 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.86604 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.86604 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.81555 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.81555 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.69066 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.65026 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.62638 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.62638 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.08024 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08024 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05750 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05750 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05426 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05426 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.05358 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.05358 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.05274 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.05274 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.05293 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.04613 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.04269 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.03650 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.03461 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.03175 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.02648 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)		DC	
B25	1ST HIGHEST VALUE IS 0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.04940 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.04009 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	

	5TH HIGHEST VALUE IS	0.03983 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.03983 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.03545 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.03445 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02931 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02528 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.16941 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.16941 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.15283 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.15283 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.13784 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.13784 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.12654 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.12654 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08876 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.08785 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS 0.13496 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.13496 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.11600 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.11600 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.11206 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.11206 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.09289 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.09289 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.08457 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.08300 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
B35	1ST HIGHEST VALUE IS 0.13671 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.13671 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.11417 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	

	4TH HIGHEST VALUE IS	0.11417 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10835 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.10835 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.09148 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08925 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08202 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06283 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	0.75925 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.75925 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65228 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65228 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.57278 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.57278 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.52279 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51091 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.45991 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.37827 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	1.86906 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.86906 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

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         3RD HIGHEST VALUE IS       1.55405 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       1.55405 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       1.52134 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       1.52134 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       1.27351 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       1.23925 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       1.07747 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       0.95467 AT (  562050.10,  4821511.55,   311.00,   311.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_V_R1_Metyr2                                                ***       11:15:59
                                                                                                                  PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


    ********   WARNING MESSAGES   ********
              ***  NONE  ***
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Scenario I_R3:

Technology Benchmarking - Option I
Calculation of Emission Rates including Example Calculation

Emission Rate Calculations for Modeling

						before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
		2016 Base RC Emission Rate (g/s) without uncertainty applied		1.78E-05	1.78E-05		7.53E-05		3.32E-05		1.19E-06	1.19E-06	2.05E-06	1.19E-06	1.19E-06	2.04E-06	2.04E-06	1.55E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
I_R3	Facility reconfiguration (RC) + Scrubber system on forehearth stack (6,7,8, or 9) + substituting LSC refractory in the forehearth (11) + forehearth conversion to air/gas combustion (12)	Description of Reduction Component							scrubber + LSC+Air/Gas									
		Individual Reduction Description							(6,7,8,or9)+11+12		partial of 12	partial of 12		partial of 12	partial of 12			
		Reduction Efficiency 1		0%	0%				20%	0%	50%	50%	0%	50%	50%	0%	0%	
		Reduction Efficiency 2							10%									
		Reduction Efficiency 3							86%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(6,7,8 or9) +11+12		2.04E-05	2.04E-05				1.70E-05		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	6.76E-05
	Explanation of calculation for B38 :	It is not appropriate to apply the air/gas reduction of 86% to the current B38 emission rate since it is using a different technology that would be removed before installing air/gas combustion. Therefore, for emission reduction estimation purposes, the B38 reconfiguration ER is assumed to be identical to that of the B11 reconfiguration emission rate.																

RC = reconfiguration
Before RC = before reconfiguration
After RC = after reconfiguration

This combination does not include any reductions for the furnace source(s). All technologies for this option are for the forehearths.

Conversion to air/gas combustion for all forehearths would require the removal of the existing prototype technologies that are currently installed on the CFM forehearth (see Source ID B38 current).
Therefore, the baseline emission rates (prior to the application of reduction efficiencies) for all forehearths at the facility would be more similar to the conventional forehearth operations (see Source ID B11 current).
However, the reconfiguration involves reducing the conventional forehearth area by approximately 50% - which would reduce the baseline emission rate of B11current by half as shown with Source ID B11 (after RC)
Therefore, the estimated baseline emission rate for all forehearth emissions after reconfiguration and the removal of the prototype technology on the CFM forehearth is shown below:

New Baseline Forehearth ER = (B11 conventional forehearth current emission rate) / 2(for reduction of forehearth area) x uncertainty factor of 1.15 x 2 (to reflect CFM forehearth at same emission rate)

New Baseline Forehearth ER = [0.000151 , g/s / 2] x 1.15 x2

New Baseline Forehearth ER = 1.73E-04

ER after technologies applied = New Baseline Forehearth ER x (1 - reduction efficiency option 1) x (1 - reduction efficiency option 2) x (1-reduction efficiency option 3)

ER after technologies applied = 0.000173 g/s x (1-0.2) x (1-0.1) x (1-0.864)

ER after technologies applied = 1.70E-05 g/s

Annual Hexavalent Chromium Results
Technical Benchmarking Option I - 5 year data set

Run (tab) Name:	Ann_Opt_I_R3_Metyr1	Ann_Opt_I_R3_Metyr2	Ann_Opt_I_R3_Metyr3	Ann_Opt_I_R3_Metyr4	Ann_Opt_I_R3_Metyr5	
Run Description:	Option I_R2, Reg 419 grid, Site Specific Met (2009)	Option I_R2, Reg 419 grid, Site Specific Met (2010)	Option I_R2, Reg 419 grid, Site Specific Met (2011)	Option I_R2, Reg 419 grid, Site Specific Met (2012)	Option I_R2, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	4.26404	4.87285	4.07768	4.32635	4.2754	**4.87285**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	1.82247	2.06567	1.72869	1.86421	1.80554	**2.06567**
B24	0.94663	1.05854	0.91869	0.94959	0.98204	**1.05854**
B25	0.85795	0.98808	0.81885	0.85051	0.85959	**0.98808**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	1.80458	2.04661	1.73754	1.80009	1.84163	**2.04661**
FOREHEAR	1.82247	2.06567	1.72869	1.86421	1.80554	**2.06567**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option I_R2, Reg 419 grid, Site Specific Met (2009)	Option I_R2, Reg 419 grid, Site Specific Met (2010)	Option I_R2, Reg 419 grid, Site Specific Met (2011)	Option I_R2, Reg 419 grid, Site Specific Met (2012)	Option I_R2, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00426404	0.00487285	0.00407768	0.00432635	0.0042754	**0.004873**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00182247	0.00206567	0.00172869	0.00186421	0.00180554	**0.002066**
B24	0.00094663	0.00105854	0.00091869	0.00094959	0.00098204	**0.001059**
B25	0.00085795	0.00098808	0.00081885	0.00085051	0.00085959	**0.000988**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00180458	0.00204661	0.00173754	0.00180009	0.00184163	**0.002047**
FOREHEAR	0.00182247	0.00206567	0.00172869	0.00186421	0.00180554	**0.002066**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00002	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

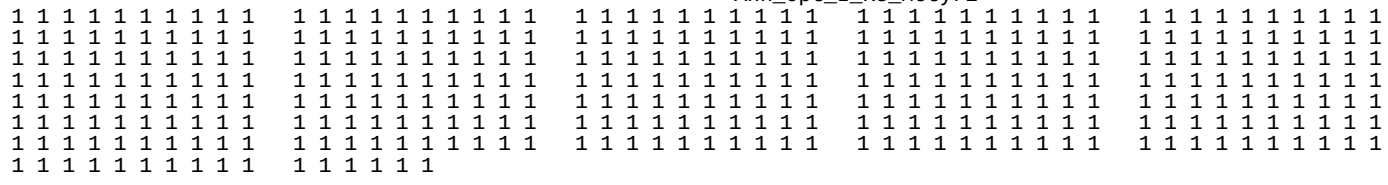
**Approximate Storage Requirements of Model =   4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_I_R3_Metyr2.sv1
**File for Summary of Results: Ann_Opt_I_R3_Metyr2.sum

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard   ***   03/22/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_I_R3_Metyr2   ***   20:14:11
                                                                                                                    PAGE   2

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                    (1=YES; 0=NO)



METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 03/22/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_I_R3_Metyr2 *** 20:14:11
PAGE 3

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0
09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	2.06567 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.06567 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.77454 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.77454 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.55832 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.55832 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.42254 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.39010 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.25110 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	1.02901 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.76057 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.65066 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.65066 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.60741 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.60741 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.54638 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.51083 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.44607 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.44607 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
B10	1ST HIGHEST VALUE IS	0.04012 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.04012 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.02875 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.02875 AT (562076.93, 4821485.66, 310.19, 310.19, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.02713 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.02713 AT (562070.22, 4821492.13, 310.40, 310.40, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.02679 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.02679 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.02637 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.02637 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID AVERAGE CONC RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE NETWORK GRID-ID

B24	1ST HIGHEST VALUE IS	1.05854	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.05854	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.92257	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.92257	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.85389	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.85389	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.72997	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.69230	AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.63497	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.52969	AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B25	1ST HIGHEST VALUE IS	0.98808	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.98808	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.80177	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.80177	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.79658	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.79658	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.70892	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.68905	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.58614	AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.50560	AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.08470	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08470	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07642	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07642	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06892	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.06892	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06327	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06327	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04438	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04392	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)						OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.06748	AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.05800	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.05800	AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.05603	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.05603	AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.04644	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.04644	AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.04229	AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.04150	AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	

B35	1ST HIGHEST VALUE IS	0.06836 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.06836 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC	
B38	1ST HIGHEST VALUE IS	2.06567 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	2.06567 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	1.77454 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	1.77454 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	1.55832 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	1.55832 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	1.42254 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	1.39010 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	1.25110 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	1.02901 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC	
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS 0.10910 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.10910 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.10763 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.10032 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.10032 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.08681 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.07391 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.07391 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.06977 AT (562085.76, 4821492.01, 310.52, 310.52, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.06310 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)		DC	
ALL	1ST HIGHEST VALUE IS 4.87285 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	4.87285 ng/m3 = 0.00487285 ug/m3
	2ND HIGHEST VALUE IS 4.87285 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 4.10629 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 4.10629 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 3.85944 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 3.85944 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 3.37536 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 3.25739 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 2.93757 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 2.28475 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)		DC	

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                 ***        03/22/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_I_R3_Metyr2                                              ***        20:14:11
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

Scenario: O_R2

Emission Rate Calculations for Modeling

						before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
O_R1	Facility reconfiguration (RC) + Scrubber system on forehearth stack (6,7,8, or 9) + forehearth conversion to air/gas combustion (12)	Description of Reduction Component							Scrubber + Air/gas									
		Individual Reduction Description							(6,7,8,or 9) + 12		Partial of 12	Partial of 12		Partial of 12	Partial of 12			
		Reduction Efficiency							20%	0%	50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency							86%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(6,7,8, or9) +12		2.04E-05	2.04E-05				1.89E-05		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	6.95E-05

Explanation of calculation for B38 : It is not appropriate to apply the air/gas reduction of 86% to the current B38 emission rate since it is using a different technology that would be removed before installing air/gas combustion. Therefore, for emission reduction estimation purposes, the B38 reconfiguration ER is assumed to be identical to that of the B11 reconfiguration emission rate.

Annual Hexavalent Chromium Results
Technical Benchmarking Option 0 - 5 year data set

Run (tab) Name:	Ann_Opt_O_R2_Metyr1	Ann_Opt_O_R2_Metyr2	Ann_Opt_O_R2_Metyr3	Ann_Opt_O_R2_Metyr4	Ann_Opt_O_R2_Metyr5	
Run Description:	Option O_R2, Reg 419 grid, Site Specific Met (2009)	Option O_R2, Reg 419 grid, Site Specific Met (2010)	Option O_R2, Reg 419 grid, Site Specific Met (2011)	Option O_R2, Reg 419 grid, Site Specific Met (2012)	Option O_R2, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	4.46567	5.10095	4.26902	4.53251	4.47516	**5.10095**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	2.0241	2.29377	1.92003	2.07037	2.0053	**2.29377**
B24	0.94663	1.05854	0.91869	0.94959	0.98204	**1.05854**
B25	0.85795	0.98808	0.81885	0.85051	0.85959	**0.98808**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	1.80458	2.04661	1.73754	1.80009	1.84163	**2.04661**
FOREHEAR	2.0241	2.29377	1.92003	2.07037	2.0053	**2.29377**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option O_R2, Reg 419 grid, Site Specific Met (2009)	Option O_R2, Reg 419 grid, Site Specific Met (2010)	Option O_R2, Reg 419 grid, Site Specific Met (2011)	Option O_R2, Reg 419 grid, Site Specific Met (2012)	Option O_R2, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00446567	0.00510095	0.00426902	0.00453251	0.00447516	**0.005101**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.0020241	0.00229377	0.00192003	0.00207037	0.0020053	**0.002294**
B24	0.00094663	0.00105854	0.00091869	0.00094959	0.00098204	**0.001059**
B25	0.00085795	0.00098808	0.00081885	0.00085051	0.00085959	**0.000988**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00180458	0.00204661	0.00173754	0.00180009	0.00184163	**0.002047**
FOREHEAR	0.0020241	0.00229377	0.00192003	0.00207037	0.0020053	**0.002294**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00002	379.15	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_O_R2_Metyr2 *** 10:53:29

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_O_R2_Metyr2.sv1
**File for Summary of Results: Ann_Opt_O_R2_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

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1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
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1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
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METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_O_R2_Metyr2 *** 10:53:29

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_O_R2_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	2.29377 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.29377 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.97059 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.97059 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.73041 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	1.73041 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.57939 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	1.54351 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	1.38943 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.14280 AT	(562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.72997 AT	(562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.69230 AT	(562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.63497 AT	(562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.52969 AT	(562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	5TH HIGHEST VALUE IS	0.79658	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.79658	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.70892	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.68905	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.58614	AT	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.50560	AT	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.08470	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08470	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07642	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07642	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06892	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.06892	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06327	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06327	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04438	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04392	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC		RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06748	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05800	AT (562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05800	AT (562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05603	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05603	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04644	AT (562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04644	AT (562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04229	AT (562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04150	AT (562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B35	1ST HIGHEST VALUE IS	0.06836	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.06836	AT (562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05709	AT (562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	2.29377 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	2.29377 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	1.97059 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	1.97059 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	1.73041 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	1.73041 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.57939 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	1.54351 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	1.38943 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.14280 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	5.10095 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	5.10095 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

```
         3RD HIGHEST VALUE IS       4.30233 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       4.30233 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       4.03153 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       4.03153 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       3.52878 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       3.41424 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       3.07589 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       2.39854 AT (  562077.84,  4821540.29,   311.01,   311.01,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_O_R2_Metyr2                                               ***       10:53:29
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

Scenario: S_R1

Emission Rate Calculations for Modeling

						before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
S	Facility reconfiguration + forehearth conversion to air/gas combustion (12)	Description of Reduction Component							Air/Gas									
		Individual Reduction Description							12		partial of 12	partial of 12		partial of 12	partial of 12			
		Reduction Efficiency		0%	0%				86%	0%	50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency																
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+12		2.04E-05	2.04E-05				2.36E-05		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	7.42E-05
	Explanation of calculation for B38 :	It is not appropriate to apply the air/gas reduction of 86% to the current B38 emission rate since it is using a different technology that would be removed before installing air/gas combustion.																
		Therefore, for emission reduction estimation purposes, the B38 reconfiguration ER is assumed to be identical to that of the B11 reconfiguration emission rate.																

Annual Hexavalent Chromium Results
Technical Benchmarking Option S - 5 year data set

Run (tab) Name:	Ann_Opt_S_R1_Metyr1	Ann_Opt_S_R1_Metyr2	Ann_Opt_S_R1_Metyr3	Ann_Opt_S_R1_Metyr4	Ann_Opt_S_R1_Metyr5	
Run Description:	Option S_R1, Reg 419 grid, Site Specific Met (2009)	Option S_R1, Reg 419 grid, Site Specific Met (2010)	Option S_R1, Reg 419 grid, Site Specific Met (2011)	Option S_R1, Reg 419 grid, Site Specific Met (2012)	Option S_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	4.97277	5.67617	4.74994	5.05131	4.97755	**5.67617**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	2.53121	2.86899	2.40095	2.58917	2.50769	**2.86899**
B24	0.94663	1.05854	0.91869	0.94959	0.98204	**1.05854**
B25	0.85795	0.98808	0.81885	0.85051	0.85959	**0.98808**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	1.80458	2.04661	1.73754	1.80009	1.84163	**2.04661**
FOREHEAR	2.53121	2.86899	2.40095	2.58917	2.50769	**2.86899**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option S_R1, Reg 419 grid, Site Specific Met (2009)	Option S_R1, Reg 419 grid, Site Specific Met (2010)	Option S_R1, Reg 419 grid, Site Specific Met (2011)	Option S_R1, Reg 419 grid, Site Specific Met (2012)	Option S_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00497277	0.00567617	0.00474994	0.00505131	0.00497755	**0.005676**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00253121	0.00286899	0.00240095	0.00258917	0.00250769	**0.002869**
B24	0.00094663	0.00105854	0.00091869	0.00094959	0.00098204	**0.001059**
B25	0.00085795	0.00098808	0.00081885	0.00085051	0.00085959	**0.000988**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00180458	0.00204661	0.00173754	0.00180009	0.00184163	**0.002047**
FOREHEAR	0.00253121	0.00286899	0.00240095	0.00258917	0.00250769	**0.002869**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00002	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

 **MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
 -

 **Model Is Setup For Calculation of Average CONCentration Values.

   -- DEPOSITION LOGIC --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION. DRYDPLT = F
 **Model Uses NO WET DEPLETION. WETDPLT = F

 **Model Uses RURAL Dispersion Only.

 **Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of: HCR

 **Model Calculates ANNUAL Averages Only

 **This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                  Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                  Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_S_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_S_R1_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_S_R1_Metyr2 *** 10:28:24

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_S_R1_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	2.86899 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.86899 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	2.46464 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	2.46464 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	2.16433 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	2.16433 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.97575 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	1.93069 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	1.73764 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.42919 AT	(562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.72997 AT	(562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.69230 AT	(562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.63497 AT	(562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.52969 AT	(562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	5TH HIGHEST VALUE IS	0.79658 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.79658 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.70892 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.68905 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.58614 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.50560 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
B32	1ST HIGHEST VALUE IS	0.08470 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.08470 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.07642 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.07642 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.06892 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.06892 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.06327 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.06327 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.04438 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.04392 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
B33	1ST HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.20783 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.18964 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.04229 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04150 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
B35	1ST HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05709 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	2.86899 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	2.86899 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	2.46464 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	2.46464 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	2.16433 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	2.16433 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	1.97575 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	1.93069 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	1.73764 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	1.42919 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	5.67617 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	5.67617 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

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         3RD HIGHEST VALUE IS       4.79639 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       4.79639 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       4.46545 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       4.46545 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       3.91596 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       3.81060 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       3.42411 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       2.68493 AT (  562077.84,  4821540.29,   311.01,   311.01,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_S_R1_Metyr2                                                ***       10:28:24
                                                                                                                  PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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Scenario: J_R2

Emission Rate Calculations for Modeling

							before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
J_R1	Facility reconfiguration (RC) + Scrubber system on forehearth stack (6,7,8, or 9) + substituting LSC refractory in the forehearth (11) + incorporating more accurate combustion control skids and construction of front end superstructures (14)	Description of Reduction Component							Scrubber + LSC+ partial prototype									
		Individual Reduction Description							(6,7,8 or 9)+11+14		Result of 14	Result of 14		Result of 14	Result of 14			
		Reduction Efficiency 1							20%	0%	50%	50%	0%	50%	50%	0%	0%	
		Reduction Efficiency 2							10%									
		Reduction Efficiency 3							50%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+6,7,8, or 9) +11+14		2.04E-05	2.04E-05				6.17E-05		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.12E-04

Explanation of calculation for B38 : The 50% reduction efficiency for control option #11 and #14 only applies to the B11 reconfigured emission rate, not the B38 current emission rate since these technologies already exist on that portion of (CFM) forehearth.

Annual Hexavalent Chromium Results
Technical Benchmarking Option J - 5 year data set

Run (tab) Name:	Ann_Opt_J_R1_Metyr1	Ann_Opt_J_R1_Metyr2	Ann_Opt_J_R1_Metyr3	Ann_Opt_J_R1_Metyr4	Ann_Opt_J_R1_Metyr5	
Run Description:	Option J_R1, Reg 419 grid, Site Specific Met (2009)	Option J_R1, Reg 419 grid, Site Specific Met (2010)	Option J_R1, Reg 419 grid, Site Specific Met (2011)	Option J_R1, Reg 419 grid, Site Specific Met (2012)	Option J_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	2.34318	2.63624	2.33788	2.42194	2.51209	**2.63624**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	1.50489	1.65425	1.52402	1.63094	1.72766	**1.72766**
B24	0.23591	0.23253	0.24181	0.22825	0.25149	**0.25149**
B25	0.16159	0.17259	0.16251	0.15383	0.1691	**0.17259**
B33	0.08734	0.11193	0.07987	0.08701	0.08128	**0.11193**
FURNACE	0.3975	0.40512	0.40432	0.38208	0.42059	**0.42059**
FOREHEAR	1.50489	1.65425	1.52402	1.63094	1.72766	**1.72766**
GENEXHTS	0.47452	0.57687	0.4516	0.4914	0.46367	**0.57687**

Run Description:	Option J_R1, Reg 419 grid, Site Specific Met (2009)	Option J_R1, Reg 419 grid, Site Specific Met (2010)	Option J_R1, Reg 419 grid, Site Specific Met (2011)	Option J_R1, Reg 419 grid, Site Specific Met (2012)	Option J_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00234318	0.00263624	0.00233788	0.00242194	0.00251209	**0.002636**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00150489	0.00165425	0.00152402	0.00163094	0.00172766	**0.001728**
B24	0.00023591	0.00023253	0.00024181	0.00022825	0.00025149	**0.000251**
B25	0.00016159	0.00017259	0.00016251	0.00015383	0.0001691	**0.000173**
B33	0.00008734	0.00011193	0.00007987	0.00008701	0.00008128	**0.000112**
FURNACE	0.0003975	0.00040512	0.00040432	0.00038208	0.00042059	**0.000421**
FOREHEAR	0.00150489	0.00165425	0.00152402	0.00163094	0.00172766	**0.001728**
GENEXHTS	0.00047452	0.00057687	0.0004516	0.0004914	0.00046367	**0.000577**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00006	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_J_R2_Metyr2.sv1
**File for Summary of Results: Ann_Opt_J_R2_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_J_R2_Metyr2 *** 12:16:45

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_J_R2_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.76057 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.65066 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.65066 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.60741 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.54638 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.51083 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	7.51457 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	7.51457 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	6.45549 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	6.45549 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	5.66890 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	5.66890 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	5.17497 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	5.05694 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	4.55130 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	3.74338 AT	(562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC	
B10	1ST HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.72997 AT	(562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.69230 AT	(562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.63497 AT	(562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.52969 AT	(562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	5TH HIGHEST VALUE IS	0.79658 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.79658 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.70892 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.68905 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.58614 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.50560 AT	(562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
B32	1ST HIGHEST VALUE IS	0.08470 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.08470 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.07642 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.07642 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.06892 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.06892 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.06327 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.06327 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.04438 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.04392 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
B33	1ST HIGHEST VALUE IS	0.29562 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.29562 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.25393 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.25393 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.23387 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.23387 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.20783 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.18964 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.16851 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.16851 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.04229 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04150 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
B35	1ST HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05709 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	7.51457 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	7.51457 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	6.45549 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	6.45549 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	5.66890 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	5.66890 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	5.17497 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	5.05694 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	4.55130 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	3.74338 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS 0.10910 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.10910 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.10763 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.10032 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.10032 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.08681 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.07391 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.07391 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.06977 AT (562085.76, 4821492.01, 310.52, 310.52, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.06310 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)		DC	
ALL	1ST HIGHEST VALUE IS 10.32175 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 10.32175 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	

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         3RD HIGHEST VALUE IS       8.78723 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       8.78723 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       7.97002 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       7.97002 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       7.04221 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       7.00982 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       6.23777 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       4.99912 AT (  562077.84,  4821540.29,   311.01,   311.01,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_J_R2_Metyr2                                               ***       12:16:45
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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Scenario: P_R2

Emission Rate Calculations for Modeling

							before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
P_R1	Facility reconfiguration (RC) + Scrubber system on forehearth stack (6,7,8, or 9) + incorporating more accurate combustion control skids and construction of front end superstructures (14)	Description of Reduction Component							Scrubber + Partial Prototype									
		Individual Reduction Description							(6,7,8, or 9) + 14		Result of 14	Result of 14		Result of 14	Result of 14			
		Reduction Efficiency							20%	0%	50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency							50%									
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(6,7,8 or 9)+14		2.04E-05	2.04E-05				6.52E-05		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.16E-04
	Explanation of calculation for B38 :	The 50% reduction efficiency for control option #14 only applies to the B11 reconfigured emission rate, not the B38 current emission rate since the technology already exists on that portion of CFM forehearth.																

Annual Hexavalent Chromium Results
Technical Benchmarking Option P - 5 year data set

Run (tab) Name:	Ann_Opt_P_R2_Metyr1	Ann_Opt_P_R2_Metyr2	Ann_Opt_P_R2_Metyr3	Ann_Opt_P_R2_Metyr4	Ann_Opt_P_R2_Metyr5	
Run Description:	Option P_R2, Reg 419 grid, Site Specific Met (2009)	Option P_R2, Reg 419 grid, Site Specific Met (2010)	Option P_R2, Reg 419 grid, Site Specific Met (2011)	Option P_R2, Reg 419 grid, Site Specific Met (2012)	Option P_R2, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	9.44364	10.74366	8.99074	9.62457	9.40688	**10.74366**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	7.00207	7.93647	6.64175	7.16243	6.93703	**7.93647**
B24	0.94663	1.05854	0.91869	0.94959	0.98204	**1.05854**
B25	0.85795	0.98808	0.81885	0.85051	0.85959	**0.98808**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	1.80458	2.04661	1.73754	1.80009	1.84163	**2.04661**
FOREHEAR	7.00207	7.93647	6.64175	7.16243	6.93703	**7.93647**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option P_R2, Reg 419 grid, Site Specific Met (2009)	Option P_R2, Reg 419 grid, Site Specific Met (2010)	Option P_R2, Reg 419 grid, Site Specific Met (2011)	Option P_R2, Reg 419 grid, Site Specific Met (2012)	Option P_R2, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00944364	0.01074366	0.00899074	0.00962457	0.00940688	**0.010744**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00700207	0.00793647	0.00664175	0.00716243	0.00693703	**0.007936**
B24	0.00094663	0.00105854	0.00091869	0.00094959	0.00098204	**0.001059**
B25	0.00085795	0.00098808	0.00081885	0.00085051	0.00085959	**0.000988**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00180458	0.00204661	0.00173754	0.00180009	0.00184163	**0.002047**
FOREHEAR	0.00700207	0.00793647	0.00664175	0.00716243	0.00693703	**0.007936**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00007	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

 **MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
 -

 **Model Is Setup For Calculation of Average CONCentration Values.

   -- DEPOSITION LOGIC --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION. DRYDPLT = F
 **Model Uses NO WET DEPLETION. WETDPLT = F

 **Model Uses RURAL Dispersion Only.

 **Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of: HCR

 **Model Calculates ANNUAL Averages Only

 **This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                  Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                  Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_P_R2_Metyr2.sv1
**File for Summary of Results: Ann_Opt_P_R2_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_P_R2_Metyr2 *** 14:55:42
PAGE 3

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_P_R2_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	7.93647 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	7.93647 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	6.81793 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	6.81793 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	5.98718 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	5.98718	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	5.46552	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	5.34086	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	4.80684	AT	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	3.95356	AT	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741	AT	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638	AT	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083	AT	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012	AT	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875	AT	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875	AT	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713	AT	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713	AT	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679	AT	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637	AT	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 1.05854 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 1.05854 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.92257 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.92257 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.85389 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.85389 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.72997 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.69230 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.63497 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.52969 AT (562077.84, 4821540.29, 311.01, 311.01, 0.00)		DC	
B25	1ST HIGHEST VALUE IS 0.98808 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.98808 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.80177 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.80177 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	

	5TH HIGHEST VALUE IS	0.79658 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.79658 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.70892 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.68905 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.58614 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.50560 AT	(562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
B32	1ST HIGHEST VALUE IS	0.08470 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.08470 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.07642 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.07642 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.06892 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.06892 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.06327 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.06327 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.04438 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.04392 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
B33	1ST HIGHEST VALUE IS	0.29562 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	2ND HIGHEST VALUE IS	0.29562 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC	
	3RD HIGHEST VALUE IS	0.25393 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	4TH HIGHEST VALUE IS	0.25393 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC	
	5TH HIGHEST VALUE IS	0.23387 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	6TH HIGHEST VALUE IS	0.23387 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC	
	7TH HIGHEST VALUE IS	0.20783 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	8TH HIGHEST VALUE IS	0.18964 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC	
	9TH HIGHEST VALUE IS	0.16851 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	
	10TH HIGHEST VALUE IS	0.16851 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC	

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.04229 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04150 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
B35	1ST HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05709 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	4TH HIGHEST VALUE IS	0.05709 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	7.93647 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	7.93647 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	6.81793 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	6.81793 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	5.98718 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	5.98718 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	5.46552 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	5.34086 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	4.80684 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	3.95356 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS 0.10910 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.10910 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.10763 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.10032 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.10032 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.08681 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.07391 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.07391 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.06977 AT (562085.76, 4821492.01, 310.52, 310.52, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.06310 AT (562056.81, 4821505.08, 310.84, 310.84, 0.00)		DC	
ALL	1ST HIGHEST VALUE IS 10.74366 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 10.74366 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	

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         3RD HIGHEST VALUE IS       9.14968 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS       9.14968 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       8.28830 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       8.28830 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       7.32613 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       7.30037 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       6.49330 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       5.20929 AT (  562077.84,  4821540.29,   311.01,   311.01,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_P_R2_Metyr2                                               ***       14:55:42
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
```

Scenario: T_R1

Emission Rate Calculations for Modeling

							before RC	after RC	before RC	After RC-CFM only								
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
T	Facility reconfiguration + incorporating more accurate combustion control skids and construction of front end superstructures (14)	Description of Reduction Component							Partial Prototype									
		Individual Reduction Description							14		Result of 14	Result of 14		Result of 14	Result of 14			
		Reduction Efficiency		0%	0%				50%	0%	50%	50%	0%	50%	50%	0%	0%	
		Additional Reduction Efficiency																
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+14		2.04E-05	2.04E-05				8.15E-05		6.87E-07	6.87E-07	2.36E-06	6.87E-07	6.87E-07	2.34E-06	2.34E-06	1.32E-04
	Explanation of calculation for B38 :	The 50% reduction efficiency for control option #14 only applies to the B11 reconfigured emission rate, not the B38 current emission rate since the technology already exists on that portion of CFM forehearth.																

Annual Hexavalent Chromium Results
Technical Benchmarking Option T - 5 year data set

Run (tab) Name:	Ann_Opt_T_R1_Metyr1	Ann_Opt_T_R1_Metyr2	Ann_Opt_T_R1_Metyr3	Ann_Opt_T_R1_Metyr4	Ann_Opt_T_R1_Metyr5	
Run Description:	Option T_R1, Reg 419 grid, Site Specific Met (2009)	Option T_R1, Reg 419 grid, Site Specific Met (2010)	Option T_R1, Reg 419 grid, Site Specific Met (2011)	Option T_R1, Reg 419 grid, Site Specific Met (2012)	Option T_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	11.19417	12.72779	10.65119	11.41519	11.14115	**12.72779**
B10	0.03908	0.04012	0.04024	0.04071	0.0402	**0.04071**
B32	0.07978	0.0847	0.07868	0.08102	0.08023	**0.0847**
B34	0.05933	0.06748	0.0576	0.06099	0.05966	**0.06748**
B35	0.05924	0.06836	0.05762	0.06181	0.05927	**0.06836**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	8.7526	9.92061	8.3022	8.95305	8.67129	**9.92061**
B24	0.94663	1.05854	0.91869	0.94959	0.98204	**1.05854**
B25	0.85795	0.98808	0.81885	0.85051	0.85959	**0.98808**
B33	0.24981	0.29562	0.23972	0.25766	0.24583	**0.29562**
FURNACE	1.80458	2.04661	1.73754	1.80009	1.84163	**2.04661**
FOREHEAR	8.7526	9.92061	8.3022	8.95305	8.67129	**9.92061**
GENEXHTS	0.63699	0.76057	0.61145	0.66205	0.62822	**0.76057**

Run Description:	Option T_R1, Reg 419 grid, Site Specific Met (2009)	Option T_R1, Reg 419 grid, Site Specific Met (2010)	Option T_R1, Reg 419 grid, Site Specific Met (2011)	Option T_R1, Reg 419 grid, Site Specific Met (2012)	Option T_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.01119417	0.01272779	0.01065119	0.01141519	0.01114115	**0.012728**
B10	0.00003908	0.00004012	0.00004024	0.00004071	0.0000402	**4.07E-05**
B32	0.00007978	0.0000847	0.00007868	0.00008102	0.00008023	**8.47E-05**
B34	0.00005933	0.00006748	0.0000576	0.00006099	0.00005966	**6.75E-05**
B35	0.00005924	0.00006836	0.00005762	0.00006181	0.00005927	**6.84E-05**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.0087526	0.00992061	0.0083022	0.00895305	0.00867129	**0.009921**
B24	0.00094663	0.00105854	0.00091869	0.00094959	0.00098204	**0.001059**
B25	0.00085795	0.00098808	0.00081885	0.00085051	0.00085959	**0.000988**
B33	0.00024981	0.00029562	0.00023972	0.00025766	0.00024583	**0.000296**
FURNACE	0.00180458	0.00204661	0.00173754	0.00180009	0.00184163	**0.002047**
FOREHEAR	0.0087526	0.00992061	0.0083022	0.00895305	0.00867129	**0.009921**
GENEXHTS	0.00063699	0.00076057	0.00061145	0.00066205	0.00062822	**0.000761**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	6.87E-7	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	6.87E-7	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00008	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_T_R1_Metyr2 *** 15:51:18

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_T_R1_Metyr2.sv1
**File for Summary of Results: Ann_Opt_T_R1_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

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1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
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1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
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METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/27/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_T_R1_Metyr2 *** 15:51:18

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_T_R1_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	9.92061 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	9.92061 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	8.52243 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	8.52243 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	7.48399 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	7.48399 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	6.83191 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	6.67609 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	6.00856 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	4.94195 AT	(562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	0.76057 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.76057 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.65066 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.65066 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.60741 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.54638 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.51083 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.44607 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.04012 AT	(562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.02875 AT	(562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.02713 AT	(562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.02679 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.02637 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 1.05854 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.92257 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.85389 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.72997 AT	(562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.69230 AT	(562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.63497 AT	(562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.52969 AT	(562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.98808 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.80177 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	5TH HIGHEST VALUE IS	0.79658 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.79658 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.70892 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.68905 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.58614 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.50560 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.08470 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08470 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.07642 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.07642 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.06892 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.06892 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.06327 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.06327 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04438 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.04392 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06748 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.05800 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.05603 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.04644 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.04229 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04150 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
B35	1ST HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.06836 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.05709 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	4TH HIGHEST VALUE IS	0.05709 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05418 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05418 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.04574 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.04462 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.04101 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.03141 AT	(562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	9.92061 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	9.92061 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	8.52243 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	8.52243 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	7.48399 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	7.48399 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	6.83191 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	6.67609 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	6.00856 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	4.94195 AT	(562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT	(562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT	(562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT	(562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT	(562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT	(562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT	(562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT	(562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS 0.10910 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.10910 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.10763 AT	(562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.10032 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.10032 AT	(562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.08681 AT	(562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.07391 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.07391 AT	(562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.06977 AT	(562085.76, 4821492.01, 310.52, 310.52, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.06310 AT	(562056.81, 4821505.08, 310.84, 310.84, 0.00)	DC	
ALL	1ST HIGHEST VALUE IS 12.72779 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 12.72779 AT	(562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	

```
         3RD HIGHEST VALUE IS      10.85417 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS      10.85417 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS       9.78510 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS       9.78510 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS       8.66676 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS       8.66135 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       7.69502 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       6.19769 AT (  562077.84,  4821540.29,   311.01,   311.01,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/27/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_T_R1_Metyr2                                               ***       15:51:18
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


    ********   WARNING MESSAGES   ********
              ***  NONE  ***
```

Scenario: W_R2

Emission Rate Calculations for Modeling

						before RC	after RC	before RC	After RC-CFM only									
		Source	B01	B24	B25	B11current	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	Total
		Type	Furnace	Furnace	Furnace	FH	FH	FH	FH	RE1	RE2	RE2	RE1	RE2	RE2	RE1	RE1	
		Current Base Case Emission Rate (g/s)	3.55E-05			1.51E-04		3.32E-05		2.05E-06	2.39E-06	2.39E-06		2.39E-06	2.39E-06	2.04E-06	2.04E-06	2.35E-04
Uncertainty =	1.15	2016 Base RC Emission Rate (g/s) with Uncertainty Factor applied		2.04E-05	2.04E-05		8.66E-05		3.82E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.78E-04
Combination ID	Option Description		B01	B24	B25	B11	B11	B38current	B38	B08	B10	B32	B33	B34	B35	C79	C80	
W_R1	Facility reconfiguration + Scrubber system on forehearth stack (6,7,8, or 9)	Description of Reduction Component							Scrubber									
		Individual Reduction Description							(6,7,8 or 9)									
		Reduction Efficiency							20%	0%	0%	0%	0%	0%	0%	0%	0%	
		Additional Reduction Efficiency																
		Comments	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	Source ER (g/s)	TotalER (g/s)
		RC+(6,7,8 or 9)		2.04E-05	2.04E-05				9.98E-05		1.37E-06	1.37E-06	2.36E-06	1.37E-06	1.37E-06	2.34E-06	2.34E-06	1.53E-04

Annual Hexavalent Chromium Results
Technical Benchmarking Option W - 5 year data set

Run (tab) Name:	Ann_Opt_W_R1_Metyr1	Ann_Opt_W_R1_Metyr2	Ann_Opt_W_R1_Metyr3	Ann_Opt_W_R1_Metyr4	Ann_Opt_W_R1_Metyr5	
Run Description:	Option W_R1, Reg 419 grid, Site Specific Met (2009)	Option W_R1, Reg 419 grid, Site Specific Met (2010)	Option W_R1, Reg 419 grid, Site Specific Met (2011)	Option W_R1, Reg 419 grid, Site Specific Met (2012)	Option W_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:		**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**	**ng/m3**
ALL	3.47727	3.90482	3.47507	3.60993	3.78339	**3.90482**
B10	0.07817	0.08024	0.08048	0.08142	0.0804	**0.08142**
B32	0.15957	0.16941	0.15737	0.16204	0.16045	**0.16941**
B34	0.11866	0.13496	0.11519	0.12199	0.11932	**0.13496**
B35	0.11847	0.13671	0.11524	0.12361	0.11854	**0.13671**
C79	0.08277	0.10893	0.07708	0.08782	0.08021	**0.10893**
C80	0.07892	0.1091	0.07271	0.08492	0.07221	**0.1091**
B38	2.43431	2.67592	2.46526	2.63821	2.79467	**2.79467**
B24	0.23591	0.23253	0.24181	0.22825	0.25149	**0.25149**
B25	0.16159	0.17259	0.16251	0.15383	0.1691	**0.17259**
B33	0.08734	0.11193	0.07987	0.08701	0.08128	**0.11193**
FURNACE	0.3975	0.40512	0.40432	0.38208	0.42059	**0.42059**
FOREHEAR	2.43431	2.67592	2.46526	2.63821	2.79467	**2.79467**
GENEXHTS	0.70001	0.82378	0.67353	0.72305	0.69364	**0.82378**

Run Description:	Option W_R1, Reg 419 grid, Site Specific Met (2009)	Option W_R1, Reg 419 grid, Site Specific Met (2010)	Option W_R1, Reg 419 grid, Site Specific Met (2011)	Option W_R1, Reg 419 grid, Site Specific Met (2012)	Option W_R1, Reg 419 grid, Site Specific Met (2013)	**MAX**
Result Units:	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**	**ug/m3**
ALL	0.00347727	0.00390482	0.00347507	0.00360993	0.00378339	**0.003905**
B10	0.00007817	0.00008024	0.00008048	0.00008142	0.0000804	**8.14E-05**
B32	0.00015957	0.00016941	0.00015737	0.00016204	0.00016045	**0.000169**
B34	0.00011866	0.00013496	0.00011519	0.00012199	0.00011932	**0.000135**
B35	0.00011847	0.00013671	0.00011524	0.00012361	0.00011854	**0.000137**
C79	0.00008277	0.00010893	0.00007708	0.00008782	0.00008021	**0.000109**
C80	0.00007892	0.0001091	0.00007271	0.00008492	0.00007221	**0.000109**
B38	0.00243431	0.00267592	0.00246526	0.00263821	0.00279467	**0.002795**
B24	0.00023591	0.00023253	0.00024181	0.00022825	0.00025149	**0.000251**
B25	0.00016159	0.00017259	0.00016251	0.00015383	0.0001691	**0.000173**
B33	0.00008734	0.00011193	0.00007987	0.00008701	0.00008128	**0.000112**
FURNACE	0.0003975	0.00040512	0.00040432	0.00038208	0.00042059	**0.000421**
FOREHEAR	0.00243431	0.00267592	0.00246526	0.00263821	0.00279467	**0.002795**
GENEXHTS	0.00070001	0.00082378	0.00067353	0.00072305	0.00069364	**0.000824**

Source Pathway - Source Inputs

Point Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/s]	Gas Exit Temp. [K]	Gas Exit Velocity [m/s]	Stack Inside Diameter [m]
POINT	B10	562030.25	4821525.28	312.00	14.45	1.37E-6	321.90	12.10	1.24
		General Exhaust Above T107B F/H							
POINT	B32	562047.16	4821528.02	312.00	14.48	1.37E-6	321.90	19.19	1.24
		General Exhaust Above T106							
POINT	B34	562039.70	4821535.65	312.00	14.48	1.37E-6	321.90	19.19	1.24
		General Exhaust Above T107A F/H							
POINT	B35	562047.03	4821543.82	312.00	14.48	1.37E-6	321.90	19.19	1.24
		General Exhaust Above CFM Main Channel							
POINT	C79	562023.15	4821559.58	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust West CFM F/H							
POINT	C80	562028.25	4821564.97	312.00	11.64	2.34E-6	310.80	9.59	1.41
		General Exhaust East CFM F/H							
POINT	B38	562043.48	4821544.79	312.00	16.46	0.00010	379.00	5.43	0.75
		105 Forehearth Stack							
POINT	B33	562055.21	4821536.35	312.00	14.48	2.36E-6	321.90	12.59	1.22
		Gen Exhaust Above T105							
POINT	B24	562052.59	4821531.65	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							
POINT	B25	562057.67	4821536.90	312.00	27.77	0.00002	597.00	5.89	0.53
		105 Furnace Stack							

Volume Sources

No Volume Sources Specified

Area Sources

No Area Sources Specified

Source Pathway - Source Inputs

Open Pit Sources

No Open Pit Sources Specified

Circular Area Sources

No Circular Area Sources Specified

Polygon Area Sources

No Polygon Area Sources Specified

Flare Sources

No Flare Sources Specified

Line Sources

No Line Sources Specified

Line Volume Sources

No Line Volume Sources Specified

Line Area Sources

No Line Area Sources Specified

♀ *** AERMOD - VERSION 14134 ***   *** OC Guelph Project 144539 - Site Specific Standard *** 02/28/15
*** AERMET - VERSION 14134 ***   *** Ann_Opt_W_R2_Metyr2 *** 06:33:23

**MODELOPTs: NonDFAULT CONC   ELEV   FLGPOL   BETA

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. BETA Option for Capped & Horiz Stacks Selected With:

                5 Capped Stack(s); and   0 Horiz Stack(s)

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: HCR

**Model Calculates ANNUAL Averages Only

**This Run Includes: 10 Source(s);   14 Source Group(s); and   2062 Receptor(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   325.00 ; Decay Coef. =   0.000   ; Rot. Angle =   0.0
                 Emission Units = GRAMS/S   ; Emission Rate Unit Factor =   0.10000E+10
                 Output Units   = NANOGRAMS/M3

**Approximate Storage Requirements of Model = 4.5 MB of RAM.

**File for Saving Result Arrays: Ann_Opt_W_R2_Metyr2.sv1
**File for Summary of Results: Ann_Opt_W_R2_Metyr2.sum

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2010 1 1 1
AND END DATE: 2010 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 14134 *** *** OC Guelph Project 144539 - Site Specific Standard *** 02/28/15
*** AERMET - VERSION 14134 *** *** Ann_Opt_W_R2_Metyr2 *** 06:33:23

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.SFC Met Version: 14134
Profile file: E:_Site Specific Met\OCGuelph_ONLY\V14134\OwensCorning-Guelph-v14134.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 61430 Upper air station no.: 14733
Name: UNKNOWN Name: BUFFALO/GREATER_BUFFALO_INT'L
Year: 2009 Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-8.4	0.105	-9.000	-9.000	-999.	81.	11.8	0.57	0.55	1.00	1.50	291.	10.0	258.1	2.0
09	01	01	1	02	-16.5	0.147	-9.000	-9.000	-999.	135.	16.6	0.57	0.55	1.00	2.10	308.	10.0	258.1	2.0
09	01	01	1	03	-8.4	0.105	-9.000	-9.000	-999.	82.	11.8	0.57	0.55	1.00	1.50	294.	10.0	257.5	2.0
09	01	01	1	04	-7.9	0.100	-9.000	-9.000	-999.	76.	11.0	0.50	0.55	1.00	1.50	233.	10.0	255.9	2.0
09	01	01	1	05	-3.5	0.067	-9.000	-9.000	-999.	41.	7.3	0.50	0.55	1.00	1.00	223.	10.0	255.3	2.0

Ann_Opt_W_R2_Metyr2

09	01	01	1	06	-3.2	0.067	-9.000	-9.000	-999.	41.	8.1	0.50	0.55	1.00	1.00	222.	10.0	254.8	2.0
09	01	01	1	07	-9.5	0.113	-9.000	-9.000	-999.	91.	13.2	0.70	0.55	1.00	1.50	145.	10.0	255.9	2.0
09	01	01	1	08	-8.5	0.109	-9.000	-9.000	-999.	86.	13.0	0.63	0.50	1.00	1.50	243.	10.0	257.5	2.0
09	01	01	1	09	-6.0	0.107	-9.000	-9.000	-999.	84.	17.8	0.61	0.95	0.76	1.50	127.	10.0	258.1	2.0
09	01	01	1	10	-1.6	0.057	-9.000	-9.000	-999.	33.	9.9	0.30	0.95	0.66	1.00	121.	10.0	263.8	2.0
09	01	01	1	11	13.2	0.424	0.253	0.009	42.	662.	-499.8	0.50	0.55	0.54	3.10	224.	10.0	264.2	2.0
09	01	01	1	12	19.8	0.428	0.402	0.008	114.	671.	-342.9	0.50	0.55	0.51	3.10	196.	10.0	265.4	2.0
09	01	01	1	13	22.9	0.367	0.559	0.011	265.	536.	-187.8	0.50	0.55	0.51	2.60	203.	10.0	265.4	2.0
09	01	01	1	14	2.1	0.468	0.256	0.007	275.	768.	-4237.3	0.70	0.55	0.48	3.10	179.	10.0	265.9	2.0
09	01	01	1	15	-4.6	0.538	-9.000	-9.000	-999.	946.	2954.8	0.70	0.55	0.51	3.60	162.	10.0	265.4	2.0
09	01	01	1	16	-20.2	0.526	-9.000	-9.000	-999.	915.	625.4	0.70	0.55	0.59	3.60	164.	10.0	265.9	2.0
09	01	01	1	17	-33.2	0.401	-9.000	-9.000	-999.	622.	168.7	0.61	0.95	0.82	3.10	141.	10.0	265.9	2.0
09	01	01	1	18	-28.3	0.491	-9.000	-9.000	-999.	824.	362.7	0.61	0.95	1.00	3.60	137.	10.0	265.9	2.0
09	01	01	1	19	-53.3	0.464	-9.000	-9.000	-999.	760.	163.0	0.61	0.95	1.00	3.60	134.	10.0	265.9	2.0
09	01	01	1	20	-60.2	0.545	-9.000	-9.000	-999.	964.	233.5	0.61	0.95	1.00	4.10	127.	10.0	265.4	2.0
09	01	01	1	21	-44.8	0.474	-9.000	-9.000	-999.	788.	206.2	0.61	0.95	1.00	3.60	130.	10.0	265.9	2.0
09	01	01	1	22	-61.4	0.544	-9.000	-9.000	-999.	961.	227.6	0.61	0.95	1.00	4.10	132.	10.0	266.4	2.0
09	01	01	1	23	-53.4	0.464	-9.000	-9.000	-999.	764.	162.3	0.61	0.95	1.00	3.60	140.	10.0	266.4	2.0
09	01	01	1	24	-21.2	0.225	-9.000	-9.000	-999.	318.	46.9	0.70	0.55	1.00	2.10	160.	10.0	267.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	291.	1.50	258.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
FURNACE	1ST HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	2.04661 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.72434 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.65046 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.43889 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.32402 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.27844 AT (562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.97929 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)	DC	
FOREHEAR	1ST HIGHEST VALUE IS	12.15557 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	12.15557 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	10.44240 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	10.44240 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	9.17001 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	

	6TH HIGHEST VALUE IS	9.17001 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	8.37103 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	8.18011 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	7.36219 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	6.05530 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
GENEXHTS	1ST HIGHEST VALUE IS	1.00748 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	1.00748 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.86604 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.86604 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.81555 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.81555 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.69066 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.65026 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.62638 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.62638 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
B10	1ST HIGHEST VALUE IS	0.08024 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.08024 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.05750 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	4TH HIGHEST VALUE IS	0.05750 AT (	562076.93,	4821485.66,	310.19,	310.19,	0.00)	DC
	5TH HIGHEST VALUE IS	0.05426 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	6TH HIGHEST VALUE IS	0.05426 AT (	562070.22,	4821492.13,	310.40,	310.40,	0.00)	DC
	7TH HIGHEST VALUE IS	0.05358 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.05358 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.05274 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.05274 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B24	1ST HIGHEST VALUE IS 1.05854 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 1.05854 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.92257 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.92257 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	5TH HIGHEST VALUE IS 0.85389 AT (	562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	6TH HIGHEST VALUE IS 0.85389 AT (	562057.04, 4821518.74, 311.00, 311.00, 0.00)	DC	
	7TH HIGHEST VALUE IS 0.72997 AT (	562065.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	8TH HIGHEST VALUE IS 0.69230 AT (	562085.76, 4821532.01, 311.00, 311.00, 0.00)	DC	
	9TH HIGHEST VALUE IS 0.63497 AT (	562085.76, 4821512.01, 311.00, 311.00, 0.00)	DC	
	10TH HIGHEST VALUE IS 0.52969 AT (	562077.84, 4821540.29, 311.01, 311.01, 0.00)	DC	
B25	1ST HIGHEST VALUE IS 0.98808 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	2ND HIGHEST VALUE IS 0.98808 AT (	562063.97, 4821525.92, 311.00, 311.00, 0.00)	DC	
	3RD HIGHEST VALUE IS 0.80177 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	
	4TH HIGHEST VALUE IS 0.80177 AT (	562070.91, 4821533.11, 311.00, 311.00, 0.00)	DC	

	5TH HIGHEST VALUE IS	0.79658 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.79658 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.70892 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.68905 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.58614 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.50560 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B32	1ST HIGHEST VALUE IS	0.16941 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.16941 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.15283 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.15283 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.13784 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.13784 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.12654 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.12654 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08876 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.08785 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
B33	1ST HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.29562 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.25393 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.23387 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.20783 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.18964 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.16851 AT (	562050.10,	4821511.55,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
B34	1ST HIGHEST VALUE IS 0.13496 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.13496 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.11600 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	4TH HIGHEST VALUE IS 0.11600 AT (562057.04, 4821518.74, 311.00, 311.00, 0.00)		DC	
	5TH HIGHEST VALUE IS 0.11206 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	6TH HIGHEST VALUE IS 0.11206 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	
	7TH HIGHEST VALUE IS 0.09289 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
	8TH HIGHEST VALUE IS 0.09289 AT (562050.10, 4821511.55, 311.00, 311.00, 0.00)		DC	
	9TH HIGHEST VALUE IS 0.08457 AT (562085.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
	10TH HIGHEST VALUE IS 0.08300 AT (562065.76, 4821512.01, 311.00, 311.00, 0.00)		DC	
B35	1ST HIGHEST VALUE IS 0.13671 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	2ND HIGHEST VALUE IS 0.13671 AT (562063.97, 4821525.92, 311.00, 311.00, 0.00)		DC	
	3RD HIGHEST VALUE IS 0.11417 AT (562070.91, 4821533.11, 311.00, 311.00, 0.00)		DC	

	4TH HIGHEST VALUE IS	0.11417 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10835 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.10835 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.09148 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08925 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.08202 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06283 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
B38	1ST HIGHEST VALUE IS	12.15557 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	12.15557 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	10.44240 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	10.44240 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	9.17001 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	9.17001 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	8.37103 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	8.18011 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	7.36219 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	6.05530 AT (	562077.84,	4821540.29,	311.01,	311.01,	0.00)	DC
C79	1ST HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10893 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.09493 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.09149 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08665 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.08102 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06501 AT (	562085.76,	4821532.01,	311.00,	311.00,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06296 AT (	562105.76,	4821512.01,	311.00,	311.00,	0.00)	DC

**MODELOPTs: NonDFAULT CONC ELEV FLGPOL BETA

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF HCR IN NANOGRAMS/M3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
C80	1ST HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	0.10910 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	3RD HIGHEST VALUE IS	0.10763 AT (	562065.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	4TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	5TH HIGHEST VALUE IS	0.10032 AT (	562057.04,	4821518.74,	311.00,	311.00,	0.00)	DC
	6TH HIGHEST VALUE IS	0.08681 AT (	562085.76,	4821512.01,	311.00,	311.00,	0.00)	DC
	7TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	8TH HIGHEST VALUE IS	0.07391 AT (	562070.91,	4821533.11,	311.00,	311.00,	0.00)	DC
	9TH HIGHEST VALUE IS	0.06977 AT (	562085.76,	4821492.01,	310.52,	310.52,	0.00)	DC
	10TH HIGHEST VALUE IS	0.06310 AT (	562056.81,	4821505.08,	310.84,	310.84,	0.00)	DC
ALL	1ST HIGHEST VALUE IS	15.20966 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC
	2ND HIGHEST VALUE IS	15.20966 AT (	562063.97,	4821525.92,	311.00,	311.00,	0.00)	DC

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         3RD HIGHEST VALUE IS      12.98229 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         4TH HIGHEST VALUE IS      12.98229 AT (  562070.91,  4821533.11,   311.00,   311.00,    0.00)  DC
         5TH HIGHEST VALUE IS      11.68651 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         6TH HIGHEST VALUE IS      11.68651 AT (  562057.04,  4821518.74,   311.00,   311.00,    0.00)  DC
         7TH HIGHEST VALUE IS      10.34532 AT (  562085.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         8TH HIGHEST VALUE IS      10.30965 AT (  562065.76,  4821512.01,   311.00,   311.00,    0.00)  DC
         9TH HIGHEST VALUE IS       9.19427 AT (  562085.76,  4821532.01,   311.00,   311.00,    0.00)  DC
        10TH HIGHEST VALUE IS       7.43715 AT (  562077.84,  4821540.29,   311.01,   311.01,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀*** AERMOD - VERSION  14134 ***   *** OC Guelph Project 144539 - Site Specific Standard                  ***        02/28/15
 *** AERMET - VERSION  14134 ***   *** Ann_Opt_W_R2_Metyr2                                               ***       06:33:23
                                                                                                                 PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      FLGPOL    BETA

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of            3 Informational Message(s)

 A Total of         8760 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of            0 Missing Hours Identified (  0.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
               ***  NONE  ***
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Appendix O Source Testing Reports

LEHDER

Test Report

Evaluation of Hexavalent Chromium Emissions
from the
T107 Furnace and Forehearth Stacks
at the
Owens Corning Guelph Plant

June and September 2014

FOR USE AS PART OF A SITE SPECIFIC STANDARD APPLICATION

Prepared for:

Owens Corning Canada LP
247 York Road
Guelph, ON
N1E 3G4

Attention: Rob Nixon

Prepared by:

LEHDER Environmental Services Limited
704 Mara Street, Suite 210
Point Edward, ON
N7V 1X4

Project No.: 144539B
November 26, 2014

Executive Summary

Owens Corning Canada LP retained LEHDER Environmental Services (LEHDER) to carry out a stack sampling program at its Guelph, Ontario facility (OC Guelph). The program involved the evaluation of hexavalent chromium emissions from three sources exhausting emissions from the T107 glass melting process. **The intention of this program was to establish emission rate estimates from these sources for the purpose of a Site Specific Standard Application for hexavalent chromium and comparison to the future annual standard.** Specifically, the following sources were sampled:

- T107 Furnace West Stack (Source B1);
- T107 West Forehearth Stack (Source B11); and
- T107 East Forehearth Stack (Source B38).

The sources were sampled for hexavalent chromium emissions according to Ontario Ministry of the Environment (MOE) recognized source sampling methods. Three test runs were performed for each of the three sources. Testing was performed on June 12, 2014. Re-testing on Source B38 was performed on September 15-16, 2014. Table I summarizes the testing results.

Table I: Furnace and Forehearth Hexavalent Chromium Test Results

Parameter	**Units**	**Source B1 West Furnace Averages June 2014**	**Source B11 West Forehearth Averages June 2014**	**Source B38 East Forehearth Averages September 2014**
Hexavalent Chromium				
Concentration	µg/R.m^3	17	96	19
Mass Rate	µg/s	36	151	33
	g/h	0.13	0.54	0.12
Effluent Measurements				
Avg. Effluent Temperature	°C	324	128	106
Average O_2 Content	%	19.2	21.3	20.7
Average CO_2 Content	%	5.78	1.24	1.18
Average Moisture Content	%	13.4	3.90	3.51
Actual Effluent Flow Rate	A.m^3/s	5.28	2.29	2.40
Reference Flow Rate (wet)	R.m^3/s	2.47	1.63	1.82
Reference Flow Rate (dry)	R.m^3/s	2.14	1.57	1.76
Average Pull Rate	lb/hr	6,849	4,552	2,297

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Full copy of the report provided to the MOECC

Test Report

Evaluation of Hexavalent Chromium Emissions
from
Selected General Ventilation Exhausts
at the
Owens Corning Guelph Plant

May 2014

FOR USE AS PART OF A SITE SPECIFIC STANDARD APPLICATION

Prepared for:

Owens Corning Canada LP
247 York Road
Guelph, ON
N1E 3G4

Attention: Rob Nixon

Prepared by:

LEHDER Environmental Services Limited
704 Mara Street, Suite 210
Point Edward, ON
N7V 1X4

Project No.: 144539A
August 1, 2014

Executive Summary

LEHDER Environmental Services Limited (LEHDER) was retained by the Owens Corning Canada LP Guelph, Ontario facility (OC Guelph) to perform a source sampling program of limited scope to confirm or refute the presence of hexavalent chromium in air that is exhausted from Furnace Hall general ventilation units. Based upon the meeting of June 12, 2014 with MOE personnel including Guillermo Azocar, Caitlyn Ruddy, and Bruce Gillies, the intention of the program was expanded to establish emission rate estimates from these sources for the purpose of a **Site Specific Standard Application for hexavalent chromium and comparison to the future annual standard.** Specifically, the following sources were sampled:

- **Source B8**: General Exhaust located above the melter/ furnace
- **Source B10**: General Exhaust located above the T107B forehearth
- **Source C80**: General Exhaust located above the T107 East (CFM) forehearth

The sources were sampled for hexavalent chromium emissions using a modified version of US EPA Method 0061: *Determination of Hexavalent Chromium Emissions from Stationary Sources.* The three ventilation fans were sampled concurrently for hexavalent chromium emissions over an approximate 7½ hour period on May 7, 2014. An extended sample period was selected to improve the concentration reporting limit for the samples and to ensure each sample was more representative of general exhaust conditions, mitigating possible emissions variability due to process operations. A single sample was collected from each source for this program, with one duplicate sample collected from one source for quality assurance purposes. Table I summarizes the testing results. The results confirmed the presence of hexavalent chromium at low but measurable concentrations in the Furnace Hall general ventilation exhaust gases.

Table I: Sampling Program Results – May 7, 2014

Parameter		Source B8	Source B10			Source C80
			B10A	B10B	Avg.	
Hexavalent Chromium Concentrations						
Raw Data	µg/R.m^3	**0.28**	0.44	0.28	**0.36**	**0.24**
Blank-Corrected	µg/R.m^3	**0.18**	0.33	0.18	**0.26**	**0.14**
Sampling Parameters						
Sample Times		8:17-15:47	8:40-16:10	8:42-16:12	---	8:56-16:33
Sample Duration	min	450	450	450	---	457
Sample Volume	R.m^3	9.71	9.85	10.4	10.1	10.5
Sample Rate	LPM	23.3	22.9	24.1	23.5	23.1
Moisture Content	%	0.26	0.51	0.42	0.47	0.48
Raw Hex Chrome Analysis	µg	2.7	4.3	2.9	3.6	2.5
Reagent Blank Hex Chrome*	µg	1.0				

** Average of three blank analyses on the capture reagent (0.5 N KOH solution)*

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Full copy provided to the MOECC

LEHDER

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NOTIFICATION

To:	Caitlyn Ruddy (MOE SDB) Kevin Noll (MOE Guelph Office)	CC:	Bruce Gillies (MOE SDB) Rob Nixon (OC Guelph) Penny McInnis (LEHDER)
Company:	Ontario Ministry of Environment	Project:	144539B OC Guelph Validated Source Testing
From:	Guy Bastien (LEHDER)	Date:	May 27, 2014
Re:	Voluntary Validated Source Testing Program		

LEHDER Environmental Services Limited (LEHDER) has been retained by the Owens Corning Composite Materials Canada LP Guelph Glass Plant, 247 York Road, Guelph, Ontario (OC Guelph) to conduct a **voluntary, validated source testing program** for hexavalent chromium emissions from selected sources. Specifically, the sampling program involves measuring hexavalent chromium emissions from the following three sources servicing the T107 glass melting and transfer process:

- T107 Furnace West Stack (Source B1);
- T107 West Forehearth Stack (Source B11); and
- T107 East Forehearth Stack (Source B38).

The sources will be sampled according to the methods described in a Source Test Protocol submitted by LEHDER to the Ontario Ministry of the Environment Standards Development Branch Technology Standards Section (MOE SDB TSS) on May 8, 2014. The testing methodologies outlined in the Test Protocol were approved by Ms. Caitlyn Ruddy, Source Assessment Specialist of the MOE SDB TSS, in a letter dated May 20, 2014 (TSS File No.: WC:SA:109157:14).

Testing is scheduled for **Thursday June 12, 2014** and is expected to be completed the same day. All three sources will be sampled concurrently. LEHDER personnel will mobilize to the site and set up testing equipment on Wednesday June 11, 2014.

Please accept this Memorandum as formal notification of the date and location of the approved source testing program. If you have any questions please contact the undersigned at 519-336-4101, Ext. 248 or by e-mail at gbastien@lehder.com.

Respectfully submitted,

LEHDER Environmental Services

Guy Bastien, P.Eng., QSTI
Sr. Environmental Engineer

September 3, 2014
Project No.: 144539B

Guillermo Azocar
Source Assessment Specialist
Technology Standards Section
Standards Development Branch
40 St. Clair Ave. West, 7th Floor
Toronto, ON M4V 1M2

Re-Testing to Evaluate Hexavalent Chromium Emissions at Owens Corning Guelph Facility

LEHDER Environmental Services Limited (LEHDER) conducted a source emission survey at the Owens Corning Glass Plant in Guelph, Ontario on June 12, 2014. During the survey, three sources from the 107 furnace/forehearth were evaluated for emissions of hexavalent chromium in accordance with the accepted test protocol dated May 8, 2014. Notification of the date and location of the source testing was provided to the Ministry of Environment by LEHDER on May 27, 2014. Sampling was witnessed by Mr. Guillermo Azocar, Ms. Caitlyn Ruddy and Mr. Bruce Gillies over the course of the day.

After completion of testing, it was discovered that operating conditions which affect one of the three sources were not correct. Consequently, measured emissions from that source were not representative of typical/normal operations. The affected source was the 107 East Forehearth Stack (Source B38). This process condition has since been rectified and retesting of the source is proposed.

This represents formal notification for the retesting of Source B38 at the target process setpoint. Hexavalent chromium sampling will be carried out using the same protocol used for the June 2014 survey (i.e. USEPA Method 0061). Three test runs, each 72 minutes in duration, will be conducted. **The test date is Tuesday, September 16, 2014**. The LEHDER field leader is Mr. Guy Bastien (e-mail: gbastien@lehder.com). Please call me of Guy if you have any questions pertaining to this testing.

Respectfully submitted,

LEHDER Environmental Services

Mike Denomme

cc. Caitlyn Ruddy (MOE SDB)
Bruce Gillies (MOE SDB)
Rob Nixon (OC Guelph Glass)
Penny McInnis/Guy Bastien (LEHDER)

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MOECC Acceptance of the Pre-Test Plan is located in Appendix Q due to commercially sensitive information.

Appendix P CAMM Documentation

Ministry of the Environment and Climate Change

Ministère de l'Environnement et de l'Action en matière de changement climatique

Ontario

Standards Development Branch
40 St. Clair Avenue West
7th Floor
Toronto ON M4V 1M2

Direction de l'élaboration des normes
40, avenue St. Clair ouest
7e étage
Toronto, ON M4V 1M2

September 22, 2014

Owens Corning Composite Materials Canada LP – Guelph Glass Facility
247 York Road
Guelph, Ontario
N1H 6P6

Attn: Robert Nixon, Engineering Leader

RE: Approval of Plan for deriving emission rates for use in Information to be included with Request for site-specific standard, September 2014

Dear Robert,

The Ministry is in receipt of your documents entitled "Test Protocol - Evaluation of Hexavalent Chromium Emissions from the T107 Furnace and Forehearth Stacks at the Owens Corning Guelph Plant" that was submitted on May 9, 2014, "CAMM Plan and Source Testing Plan in Support of a Site Specific Standard Owens Corning Canada LP Guelph, Ontario REVISION 1" that was submitted on July 24, 2014, the letter regarding a retest of Source B38 that was submitted September 3, 2014, and "Test Report: Evaluation of Hexavalent Chromium Emissions from Selected General Ventilation Exhausts at the Owens Corning Guelph Plant" that was submitted on August 8, 2014 (all describing the Plan).

The Ministry has reviewed the Plan, and is satisfied that the approach to be used is likely to provide an accurate reflection of emissions. I approve the Plan. I am of the opinion that a report prepared in accordance with section 26, using an emission rate determined in accordance with paragraph 2 of subsection 11 (1) will accurately determine the concentrations of hexavalent chromium.

Please call (416-212-4457) or e-mail Bruce Gillies at bruce.gillies@ontario.ca if you have any questions.

Yours truly,

S. Klose

Steve Klose, P.Eng.
Director, Section 11, Ontario Regulation 419/05
Director, Standards Development Branch

CAMM Plan and Source Testing Plan in Support of a Site Specific Standard Owens Corning Canada LP Guelph, Ontario REVISION 1

Confidential Commercially Sensitive Information

Jointly Prepared by:

LEHDER Environmental Services Limited
704 Mara Street, Suite 210
Point Edward, ON
N7V 1X4

Owens Corning Composite Materials Canada LP
Guelph Glass Facility
247 York Road
Guelph, ON

Project No.: 144539
July 2014

Executive Summary

The Owens Corning Composite Materials Canada LP - Guelph Glass Plant is located at 247 York Road, in Guelph, Ontario (OC Guelph). The facility produces textile glass yarn and fiberglass for reinforcements for commercial and industrial markets worldwide. The NAICS code for the OC Guelph facility is 327214: Glass Manufacturing. This NAICS code is not listed on either Schedule 4 or Schedule 5 of O.Reg. 419/05.

The Owens Corning Guelph Glass Facility has initiated the process of pursuing a Site Specific Alternate Standard for hexavalent chromium pursuant to O. Reg. 419/05 S. 32.

Chromium-containing refractory is universally used by the fiberglass industry as the material to construct the channels that contain molten glass due to its superior corrosion resistance, which significantly reduces waste and provides acceptable operational efficiency. This refractory is the source of di and tri valent chromium which is partially converted to the hexavalent form in furnace and forehearths prior to emission. The exposure of the chromic oxide refractory to the combustion environment, above the molten glass level, and alkalis in the glass are expected to be the primary mechanisms for the generation of hexavalent chromium.

In 2013 the facility installed full scale prototype refractory, forehearth sealing techniques and combustion control systems on a portion of the forehearth referred to as the East Forehearth. This channel and associated stack (Source B38) now represent a separate operating condition from the remainder of the forehearth channel which remains with the standard construction and combustion system (Source B11).

The combustion atmosphere in the furnace and forehearths are controlled environments due to ratio controlled combustion and near air tight refractory construction. Emissions from the melting process are emitted through three primary stacks and several general ventilation exhaust stacks. Therefore, the CAMM process is not suited for this site.

The sources of hexavalent chromium emissions from the facility are well defined and can be accurately measured using MOE-approved source testing protocols. Owens Corning proposes that source testing alone be utilized to obtain refined hexavalent chromium emission estimates for the purpose of the ESDM Report supporting the Site Specific Standard application.

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APPENDIX D *SUMMARY OF HISTORICAL TESTING AND PRODUCTION RATES*

1. Intention to Apply for a Site Specific Standard

As indicated in a letter to Kevin Noll at the Guelph District Office of the MOE on December 12, 2013, the Owens Corning Guelph Glass Facility will pursue a Site Specific Alternate Standard for hexavalent chromium pursuant to O. Reg. 419/05 S. 32.

Subsequent to the above letter, Owens Corning met with MOE personnel from the Regional Technical Support Section and the Standards Development Branch on January 28, 2014 to initiate discussions and share information about the facility. An outcome from the January meeting was a site visit at the Guelph Glass Plant for MOE personnel to have a facility tour and develop a more thorough understanding of the processes and emission points. This site visit was completed on February 20, 2014. The following MOE personnel were in attendance on February 20: Bruce Gillies, Nicholas Ting, Sean Avery, Patricia Wang, Edward Chang-Yen, and Kevin Noll.

Two source testing programs were completed in May and June of 2014 to collect data in support of an Application for a Site Specific Standard. Information collected from these testing programs is incorporated into this revised report.

2. Facility Description

The Owens Corning Composite Materials Canada LP - Guelph Glass Plant is located at 247 York Road, in Guelph, Ontario (OC Guelph). The facility produces textile glass yarn and fiberglass for reinforcements for commercial and industrial markets worldwide. This facility is the sole producer of Continuous Filament Mat (CFM) in Ontario and Canada. Owens Corning in Guelph has been in operation since 1951 and is recognized as the World's leading producer of high quality CFM and Chopped Strand Mat (CSM).

The NAICS code for the OC Guelph facility is 327214: Glass Manufacturing. This NAICS code is not listed on either Schedule 4 or Schedule 5 of O.Reg. 419/05 (Air Pollution – Local Air Quality). The facility operates the furnace and forehearths under Amended Certificate of Approval (Air) Number 8-2181-99-999 originally issued in September 1999. Two subsequent notices (amendments) were issued in April 2003 (Notice No. 1) and March 2006 (Notice No. 2). A copy of the current Certificates of Approval related to the furnace and forehearths are located in Appendix A.

A general location drawing and a simplified process flow diagram for the overall facility are located in Appendix B.

2.1 Process Details Related to Hexavalent Chromium

The furnace and forehearth structures that contain and transport the molten glass are lined with various types of refractory brick. Chromium-containing refractory is universally used by the fiberglass industry as the material to construct the channels that contain molten glass due to its superior corrosion resistance which significantly reduces waste and provides acceptable operational efficiency. This refractory is the source of di and tri valent chromium which is partially converted to the hexavalent form in furnace and forehearths prior to emission.

Most of the batch materials are mined and contain trace (ppm) amounts of chromium. This facility does not use any recycled glass in the form of cullet or off-spec products in the furnace due to quality control issues. Only native batch materials are used. Batch materials are not anticipated to be a significant contributor to chromium emissions. A mass balance around the glass melting process indicates that the finished glass product contains more chromium than is contributed by the raw batch materials.

A simplified process flow diagram for hexavalent chromium sources and a drawing of the facility indicating the location of the sources of interest are located in Appendix B.

2.2 Mechanisms for Hexavalent Chromium Generation

This page contains confidential information. Please see Appendix Q.

2.3 Hexavalent Chromium Reduction Efforts

This facility has completed a number of improvements to reduce hexavalent chromium generation and emission from a significant portion of the forehearth that recently required a re-build. This section, designated as the T107 East Forehearth, is serviced by Source B38. The improvements are as follows for the T107 East Forehearth (Source B38):

- Installed prototype refractory with modified refractory chemistry (increased resistance to chromium sublimation)
- Installed new combustion ratio control system to reduce excess oxygen (and reduce chromium sublimation)
- Installed castable refractory seal to reduce air ingress, a source of oxygen (and reduce chromium sublimation)

Reduction of excess oxygen, achieved by the combination of the castable refractory seal and the utilization of precision oxygen/gas ratio combustion controls, is expected to be the predominant factor in emissions reduction as compared to the use of the new, lower sublimation chrome refractory.

Details of these improvements (full scale prototypes) were provided in a letter to Kevin Noll at the Guelph District Office in August of 2013. A copy of this letter is located in Appendix C.

3. Validated Source Testing

Exhaust gases from the glass melting and molten glass transfer process (via the forehearths) are known to contain hexavalent chromium compounds. LEHDER Environmental Services Limited (LEHDER) was retained by the facility to conduct an emissions testing program to establish refined hexavalent chromium emission estimates. The facility completed a voluntary, validated source testing program on June 12, 2014 for the three primary sources emitting hexavalent chromium. The results of this program are intended to support an application for a Site Specific Standard for hexavalent chromium at the facility.

The sampling program involved measuring hexavalent chromium emissions from three sources servicing the T107 glass melting and transfer process. Specifically, the following sources were sampled:

- T107 Furnace West Stack (Source B1);
- T107 West Forehearth Stack (Source B11); and
- T107 East Forehearth Stack (Source B38)

The west forehearth consists of standard forehearth construction and the emissions are exhausted through Source B11. The east forehearth was re-built in early 2013 as a prototype of new technologies and the emissions from this area are exhausted through Source B38. Triplicate test runs were performed for each of the three sources under the current production rate of approximately 6800 lb/h molten glass pull.

The source testing was attended by MOE personnel Caitlyn Ruddy and Guillermo Azocar. The Source Testing Report will be submitted to the MOE Technology Standards Section (TSS) as required for validated testing programs.

3.1 Operating Conditions

The production rate at the facility is stated in terms of molten glass pull (i.e. lb molten glass pulled from the furnace per hour). Significant time (on the order of months) is required to introduce a step change in the molten glass pull rate. During the transition period to a new pull rate, significant quantities of waste glass are produced while the correct operating conditions to obtain the required product specifications are determined. The facility utilizes long range forecasting for production needs (~ year) to set the furnace capacity (production) at a steady rate.

This type of manufacturing process is not conducive to performing source testing at a range of production throughputs during a single source testing campaign. An assessment of data from two previous source testing programs in addition to this validated source testing program does not indicate a relationship between

hexavalent chromium emissions and furnace production rate. A detailed discussion is provided below.

3.1.1 Historical Data and Other Facility Data

This facility has now conducted source testing on the furnace and forehearth stacks in 2011, 2013 and 2014 using the same testing method (Method 0061). The 2014 testing program was completed as a validated source testing program. All three testing campaigns were completed with all three stacks tested simultaneously and in triplicate.

Evaluation of the three testing programs supports the position that the production rate (molten glass throughput) is not a significant variable in the generation of hexavalent chromium emissions. A graph of available data for hexavalent chromium emission rates vs furnace glass pull (updated to include the 2014 data) is located in Appendix D.

The past programs have included measurements before and after the construction of the full scale prototype (east) forehearth configuration. Several different combustion conditions (excess oxygen levels) were evaluated post prototype (2013). The data suggested a relationship between the amount of excess oxygen in the combustion area and the generation of hexavalent chromium. A graph of this data is provided in Appendix D.

Additional testing data is available from other Owens Corning facilities; however it is restricted to hexavalent chromium from furnace stacks only. Another drawback to these data sets is that either a single operating condition has been tested, or the furnace and forehearth configuration and firing environments for these other facilities are different and cannot be directly compared to the furnace and forehearths at the Guelph Facility.

The facility most closely resembling the Guelph facility is in Besana, Italy. However, their furnace and forehearths are natural gas/air-fired in comparison to the Guelph facility which is natural gas/oxygen-fired. The facility in Besana is considering conducting a testing program for hexavalent chromium emissions but data is not likely to be available in time to support this application.

3.1.2 Operating Conditions for Testing Purposes

As discussed in the previous section, the mechanism for the generation of hexavalent chromium is not expected to be related to the glass production rate. The facility has now collected data at three separate production rates (6850, 8300, 9000 lb/hr).

Additionally, the facility completed a validated source testing program under a range of operating conditions represented by the two different forehearth configurations. The standard construction (west) forehearth is served by Source B11. The full scale prototype (east) forehearth is served by Source B38. These are significantly different operating conditions due to their varied construction as well as the combustion controls.

4. General Ventilation Exhaust Source Testing

In response to the comments received from the MOE on April 24, 2014 regarding the original CAMM and Source Testing Plan submitted, Owens Corning initiated some additional sampling. LEHDER performed a source sampling program of limited scope to confirm or refute the presence of hexavalent chromium in air that is exhausted from Furnace Hall general ventilation units.

Three general exhausts were sampled for hexavalent chromium:

- Source B8: General Exhaust located above the melter/furnace
- Source B10: General Exhaust located above a section of the west forehearth
- Source C80: General Exhaust located above the East (CFM) forehearth

The selected units service different areas of the Furnace Hall, thereby providing a good representation of general exhaust from the furnace and each of the forehearth areas. Sampling from the rooftop ventilator locations provided the most controlled location to assess the presence of hexavalent chromium in general exhaust air.

The three ventilation fans were sampled concurrently for hexavalent chromium emissions over an approximate 7½ hour period on May 7, 2014. An extended sample period was selected to improve the concentration reporting limit for the samples and to ensure each sample was more representative of general exhaust conditions, mitigating possible emissions variability due to process operations. A single sample was collected from each source for this program, except where subsequently noted.

4.1 Sampling Methodology

The sources were sampled for hexavalent chromium using a modified version of EPA Method 0061: Determination of Hexavalent Chromium Emissions from Stationary Sources. This is the same methodology employed to sample the Forehearth and Furnace Stacks. The sources are not suitable for standard source sampling equipment as currently configured with short stacks and capped exhaust points.

The samples were collected for concentration analyses only; that is, the exhaust gas flow rates were not measured and the samples were not collected isokinetically due to the significant challenges presented by the stack configuration. Sampling was performed at a fixed sampling rate from a single sampling point for each source. Two samples were collected simultaneously from Source B10 as a quality assurance / quality control (QA/QC) measure, to verify reproducibility of results.

4.2 Results & Quantification

The results indicate that hexavalent chromium was present in low but measurable quantities in the Furnace Hall general ventilation exhaust air. In response to these results, a meeting was held at the facility on June 12, 2014 to discuss how to best proceed with this information. The meeting was attended by Mike Denomme and Penny McInnis (LEHDER), Rob Nixon (Owens Corning), and Caitlyn Ruddy, Guillermo Azocar and Bruce Gillies (MOE). It was agreed that due to the absence of particulate exhausted through the general exhausts, isokinetic testing would not be necessary. Additionally, since sampling times were almost 8 hours in duration and a representative cross section of general exhausts were sampled, the concentration data collected on May 7, 2014 could be used in combination with fan curve flow data to estimate emission rates.

A source testing report for the General Ventilation Testing Program will be submitted to Caitlyn Ruddy and Guillermo Azocar.

5. CAMM Plan

As outlined in the *Guide to Requesting an Alternative Air Standard*, a Plan for a Combined Modelling/Monitoring (CAMM) Results Assessment must be submitted prior to completing an ESDM Report as part of a Section 32 request.

It is understood that the purpose of a Combined Modelling/Monitoring Program is to obtain emission estimates with the highest data quality. These emission estimates are then incorporated into a refined ESDM Report.

CAMM programs are intended for (and more ideally suited for) facilities with fugitive emissions that cannot accurately be measured for subsequent use in air dispersion models. The characteristics of the processes generating emissions at the Guelph Glass facility are such that fugitive emissions are not anticipated as outlined in the following sections.

5.1 Source Characterization

The furnace is completely enclosed with the exception of several small observation ports around the furnace which are usually closed except during short periods of furnace observation by operators. The furnace atmosphere is a controlled environment due to the supply of oxygen at greater than 90% purity. Emissions from the furnace are directed through a stack above the furnace.

The molten glass flows by gravity through an enclosed sump into the enclosed forehearth channel. The gravity flow in the channel is controlled by adjusting the elevation of the base of the channel sections. All of the sections of the forehearths (T107 west and T107 east) are enclosed. Small, natural gas/oxygen fired burners are located at regular intervals throughout the forehearth channels to maintain glass viscosity.

There are two forehearth exhaust stacks as noted previously in Section 3. These exhausts are constructed of refractory brick near the bottom and have a hood type enclosure above the brick. There is a small opening between the brick and the hood where air in the surrounding room is drawn in by the venturi type effect of the hot forehearth combustion gases (~1500 °C) moving quickly up the exhaust stack. This entrained air helps to cool the forehearth exhaust gases to a temperature of less than 200 °C when exiting the stack.

The molten glass atmosphere is enclosed up until the molten glass is fed through the bushings at which point it is almost instantaneously cooled to a solid glass fiber. At the bushings and beyond, there are no opportunities for hexavalent chromium to be generated. Any trace amounts of chromium remaining in the glass remains inert and chromium bearing refractory (the source of the chromium) is not utilized in the process beyond the furnace and forehearths.

There are several building ventilation exhaust fans in the general Furnace Hall area to remove the radiant heat emitted into the building from furnace and forehearth operations. Because of the enclosed furnace and forehearth arrangements and the configuration of the process exhausts, the primary sources of hexavalent chromium emissions are the three point source stacks identified as the furnace and forehearth stacks. The residual trace amounts of hexavalent chromium not captured by the furnace and forehearth stacks are emitted through the general ventilation exhaust stacks.

5.2 Requested Approach

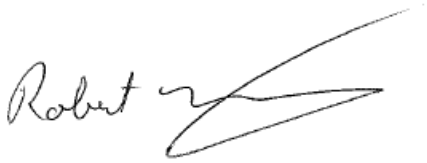
The sources of hexavalent chromium emissions from the facility are well defined and can be accurately measured using MOE-approved source testing protocols. Therefore, the CAMM process is not suited for this site.

Owens Corning requests that source testing alone (completed to date) be utilized to obtain refined hexavalent chromium emission estimates for the purpose of the ESDM Report supporting the Site Specific Standard application.

6. Closure

Thank you for the opportunity to present this submission related to the requirements of the Site Specific Standard process. We trust that this meets your requirements. Should you have any questions or require additional information on any aspect, feel free to call us at (519) 336-4101 ext. 245.

Yours truly,



LEHDER Environmental Services Ltd	Owens Corning Guelph Glass Plant
Penny McInnis, P. Eng.	Robert Nixon, B.Sc (Eng.)
Principal	Engineering Leader

CAMM Plan / Source Testing Plan

Appendix A Current Certificates of Approval

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
AIR
NUMBER 8-2181-91-999

received OCT 6/99

Owens-Corning Canada Inc.
247 York Road
P.O. Box 3603
Guelph, Ontario
N1E 3G4

Located at:

247 York Road
Guelph, Ontario

You have applied in accordance with Section 9 of the Environmental Protection Act for approval of:

- four (4) natural gas fired furnaces for the production of glass fibres as listed in the attached Schedule "A";
- twenty (20) dust collectors to control particulate emissions as listed in the attached Schedule "B";
- three (3) blowers as listed in the attached Schedule "C";
- one (1) process trial for the recycle of glass into the T105 Furnace,

all in accordance with the two (2) applications for a Certificate of Approval (Air) and supporting information submitted by Owens-Corning Canada Inc., both signed by Mike McCaig, dated July 21, 1999 and September 7, 1999; and letter from Owens-Corning Canada Inc., signed by Rod Irving and dated September 7, 1999.

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

DEFINITIONS

1. For the purpose of this Certificate:

   (1) "Act" means the *Environmental Protection Act;*

   (2) "Certificate" means this Certificate of Approval, including Schedules "A", "B" and "C", issued in accordance with Section 9 of the Act;

(3) "Company" means Owens-Corning Canada Inc.;

(4) "Equipment" means the dust collectors described in the Company's application, this Certificate and in the supporting documentation referred to herein, to the extent approved by this Certificate, as listed in Schedule "B" attached to this Certificate;

(5) "Manual" means a document or a set of documents that provide written instructions to staff of the Company; and

(6) "Ministry" means the Ontario Ministry of the Environment.

2. The process trial for the recycle of glass into the T105 Furnace shall expire June 30, 2000.

OPERATION AND MAINTENANCE

3. The Company shall ensure that the Equipment is properly operated and maintained at all times. The Company shall:

(1) prepare, not later than three (3) months after the date of this Certificate, and update, as necessary, a Manual outlining the operating procedures and a maintenance program for the Equipment, including:

(a) routine operating and maintenance procedures in accordance with good engineering practices and as recommended by the Equipment suppliers;

(b) emergency procedures;

(c) the frequency of inspection and replacement of the filter material in the Equipment;

(d) procedures for any record keeping activities relating to operation and maintenance of the Equipment;

(2) implement the recommendations of the operating and maintenance Manual; and

(3) retain, for a minimum of two (2) years from the date of their creation, all records on the maintenance, repair and inspection of the Equipment, and make these records available for review by staff of the Ministry upon request.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition No. 1 is included to define the special terms that are used throughout the Certificate.

2. Condition No. 2 is included to allow the Company sufficient time to carry out the process trial.

3. Condition No. 3 is included to emphasize that the Equipment must be maintained and operated according to a procedure that will result in compliance with the Act, the regulations and this Certificate. In addition, the Company is required to keep records and provide information to staff of the Ministry so that compliance with the Act, the regulations and this Certificate can be verified.

This Amended Certificate of Approval (Air) revokes and replaces Amended Certificate of Approval (Air) No. 8-2181-91-978 dated May 13, 1997.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written Notice served upon me, the Environmental Appeal Board and in accordance with Section 47 of the Environmental Bill of Rights, S.O. 1993, Chapter 28, the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Board. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*,
Environmental Appeal Board,
2300 Yonge St., 12th Floor,
P.O. Box 2382,
Toronto, Ontario.
M4P 1E4

The Environmental Commissioner,
1075 Bay Street,
Suite 605,
6th Floor,
Toronto, Ontario.
M5S 2B1

The Director,
Section 9, *Environmental Protection Act*,
Ministry of the Environment,
2 St. Clair Avenue West, 12A Floor,
Toronto, Ontario.
M4V 1L5

* ***Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board by: Tel: (416) 314-4600, Fax: (416) 314-4506 or Web Site: www.ert.gov.on.ca***

This instrument is subject to Section 38 of the Environmental Bill of Rights, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.

The above noted works are approved under Section 9 of the Environmental Protection Act.

DATED AT TORONTO this 27th *day of* September, 1999.

S. Klose, P.Eng.,
Director,
Section 9,
Environmental Protection Act.

RT/ba

cc: -District Manager, MOE Guelph District Office
-S. Lethbridge, LEHDER Environmental Services Limited

SCHEDULE "A"

This Schedule "A" forms part of Certificate of Approval (Air) No. 8-2181-91-999

DESCRIPTION	STACK NUMBER	EXHUAST GAS VOLUME (cubic metre per second)	STACK EXIT DIAMETER (metre)	STACK HEIGHT ABOVE ROOF (metres)	STACK HEIGHT ABOVE GRADE (metres)	FURNACE THROUGHPUT (kilograms per hour)	FURNACE TEMPERATURE (degrees Celsius)	GAS USAGE (cubic metres per hour)	HEAT SOURCE
101 Forehearth	A37	0.5	0.41	2.7	15.5			130	natural gas/air
101 Furnace	A38	1.6	0.76	14.8	27.6	500	1625	400	natural gas/air
103 Forehearth	A26	0.5	0.41	2.7	25			130	natural gas/air
103 Furnace	A28	1.5	0.76	5.3	27.6	727	1625	400	E Boost, natural gas/air
105 Furnace (east)	B24	1.3	0.53	4	27.8	1182 (total)	1625	220	natural gas/oxygen
105 Furnace (west)	B25	1.2	0.53	4	27.8		1625	220	natural gas/oxygen
105 Forehearth	B38	0.5	0.46	3.7	16.5			130	natural gas/air
107 Furnace (west)	B01	2.1	0.8	4.6	32	4536 (total)	1625	450	E Boost, natural gas/oxygen or E Boost, natural gas/air

DESCRIPTION	STACK NUMBER	EXHUAST GAS VOLUME (cubic metre per second)	STACK EXIT DIAMETER (metre)	STACK HEIGHT ABOVE ROOF (metres)	STACK HEIGHT ABOVE GRADE (metres)	FURNACE THROUGHPUT (kilograms per hour)	FURNACE TEMPERATURE (degrees Celsius)	GAS USAGE (cubic metres per hour)	HEAT SOURCE
107 Furnace (east)	B02	2.1	0.8	4.6	32		1625	450	E Boost, natural gas/oxygen or E Boost, natural gas/air
107B Forehearth	B11	0.5	0.61	2.3	15.1			90	natural gas/air
107C Forehearth	B12	0.5	0.46	3.3	16.1			90	natural gas/air
107A Forehearth	B37	0.5	0.46	2.4	15.2			90	natural gas/air
107C Forming Scrap Tunnel	B15	19.2	1.2x1.5	2.1	14.9				
107B Forming Scrap Tunnel	B16	19.2	1.2x1.5	2.1	14.9				
107A Forming Scrap Tunnel	B39	14	0.9x1.1	2.1	14.9				

SCHEDULE "B"

This Schedule "B" forms part of Certificate of Approval (Air) No. 8-2181-91-999

PROCESS	STACK	DESCRIPTION	FILTER AREA (square metres)	VOLUMETRIC FLOW RATE (cubic metres per second)	STACK EXIT DIAMETER (metre)	STACK HEIGHT ABOVE ROOF (metres)	STACK HEIGHT ABOVE GRADE (metres)
101	A42	Furnace 101	10.68	0.33	0.15	9.5	22.3
103	A27	Furnace 103	10.68	0.33	0.14	1.2	23.5
105	B31	Furnace 105	10.68	0.33	0.20 x 0.20	10.8	23.6
107	B05	Furnace 107 west	16.72	0.33	0.15	10.8	23.6
107	B06	Furnace 107 east	16.72	0.33	0.15	10.8	23.6
Batch	G32	Zinc Oxide	16.72	0.33	0.14	0.6	7.0
	G39	Batch House	9.94	0.33	0.20 x 0.25		35.7
	G40	Batch House	16.72	0.33	0.20 x 0.25		35.7
	G45	Mixed Batch	16.72	0.24	0.20 x 0.25		35.7
	G46	Bad Batch	9.38	1.32	0.33 x 0.27		12.2
	G47	Bad Batch	10.68	0.33	0.20		5.8
	G48	Batch Ingredient	10.68	0.33	0.14		31.4
	G49	Batch Ingredient	44.59	0.33	0.14		31.4
	G50	Batch Ingredient	44.59	0.33	0.14		31.4
	G51	Batch Ingredient	10.68	0.33	0.14		31.4
	G52	Batch Ingredient	10.68	0.33	0.14		31.4
	G61	Silo 18	16.72	0.24	0.14		21.6
	G62	Silo 19	16.72	0.24	0.14		21.6
	G63	Silo 20	16.72	0.24	0.14		21.6
	G64	Silo 21	37.73	0.24	0.14		21.6

SCHEDULE 'C'

This Schedule "C" forms part of Certificate of Approval (Air) No. 8-2181-91-999

PROCESS	STACK	DESCRIPTION	VOLUMETRIC FLOW RATE (cubic metre per second)	STACK EXIT DIAMETER (metre)	STACK HEIGHT ABOVE ROOF (metres)	STACK HEIGHT ABOVE GRADE (metres)
Batch	G35	Transfer #1	0.33	0.10	1.2	7.6
	G36	Transfer #2	0.33	0.10	0.9	7.3
	G38	Transfer #3	0.33	0.10	2.1	8.5

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDMENT TO CERTIFICATE OF APPROVAL
AIR
NUMBER 8-2181-91-999
Notice No. 1

Owens-Corning Canada Inc.
247 York Rd., Box 3603
Guelph, Ontario
N1E 3G4

Site Location: 247 York Road
Guelph City, County Of Wellington

You are hereby notified that I have amended Certificate of Approval No. 8-2181-91-999 issued on September 27, 1999 for natural gas furnaces, dust collectors and blowers, as follows:

to remove the requirement to use E-boost from the operation of 107 furnace, East and West, as described in Schedule "A" of the above Certificate and to operate on natural gas/oxygen firing only;

all in accordance with the Application for Approval signed by Robert Harrison dated February 11, 2003, the supporting documentation prepared by Lehder Environmental Services Limited dated November 2002, the letter from Steve Hawkins of Lehder Environmental Services Limited to A. Khaja of the Ontario Ministry of the Environment dated April 11, 2003 and all the other supporting information.

This Notice shall constitute part of the approval issued under Certificate of Approval No. 8-2181-91-999 dated September 27, 1999

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, S.O. 1993, Chapter 28, the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

P.1/2
SEP 20 '05 03:38PM 519 823 7239

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Environmental Commissioner
1075 Bay Street, 6th Floor
Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director
Section 9, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ene.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted works are approved under Section 9 of the Environmental Protection Act.

DATED AT TORONTO this 25th day of April, 2003

Neil Parrish, P.Eng.
Director
Section 9, *Environmental Protection Act*

AK/
c: District Manager, MOE Guelph
Rob Harrison, Owens-Corning Canada Inc.

SEP 20 '05 03:38PM 519 823 7239 P.2/2

Ontario

Ministry of the Environment | Ministère de l'Environnement

AMENDMENT TO CERTIFICATE OF APPROVAL
..AIR
NUMBER 8-2181-91-999
Notice No. 2
Issue Date: March 3, 2006

Owens Corning Canada Inc.
P.O. Box 3603
Guelph, Ontario
N1H 6P6

Site Location: 247 York Road, Guelph, Ontario.

You are hereby notified that I have amended Certificate of Approval No. 8-2181-91-999 issued on September 27, 1999 for a facility producing glass fibres, as follows:

- the use of sodium sulphate salt cake in the batch materials in the production of glass fibres;

- the replacement of an existing silo baghouse dust collector (G52) with a new silo baghouse dust collector (G65), having a filtering velocity of 2.5 centimetres per second and a volumetric capacity of 0.44 cubic metre per second, discharging at 35.7 metres above grade;

all in accordance with the application for a Certificate of Approval (Air) and all supporting information dated October 3, 2005, signed by C. White.

Other Terms and Conditions remain the same.

This Notice shall constitute part of the approval issued under Certificate of Approval No. 8-2181-91-999 dated September 27, 1999.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, S.O. 1993, Chapter 28, the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to eachportion appealed.

The Notice should also include:

P.2/3
HPR 17 '06 09:02AM 519 823 7239

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Environmental Commissioner
1075 Bay Street, 6th Floor
Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director
Section 9, *Environmental Protection Act*
Ministry of Environment and Energy
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ene.gov.on.ca, you can determine when the leave to appeal period ends.

The above noted works are approved under Section 9 of the Environmental Protection Act.

DATED AT TORONTO this 3rd day of March, 2006

THIS NOTICE WAS MAILED
ON March 30 2006
SC
(Signed)

Victor Low, P.Eng.
Director
Section 9, *Environmental Protection Act*

QN/
c: District Manager, MOE Guelph
Rob Nixon, Owens Corning Canada Inc. ✓

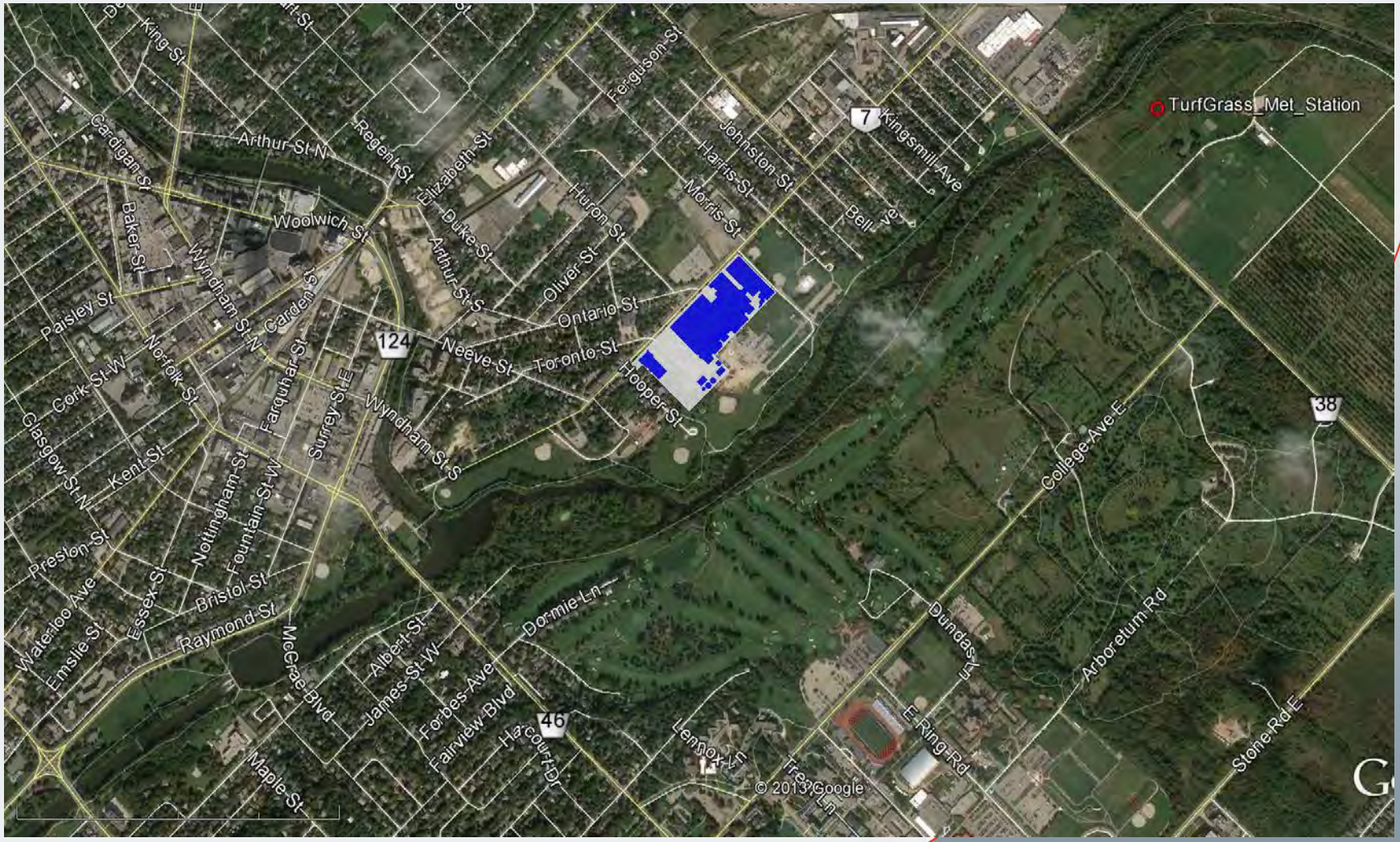
P.3/3
MAR 31 '06 09:02AM 519 823 7239

CAMM Plan / Source Testing Plan

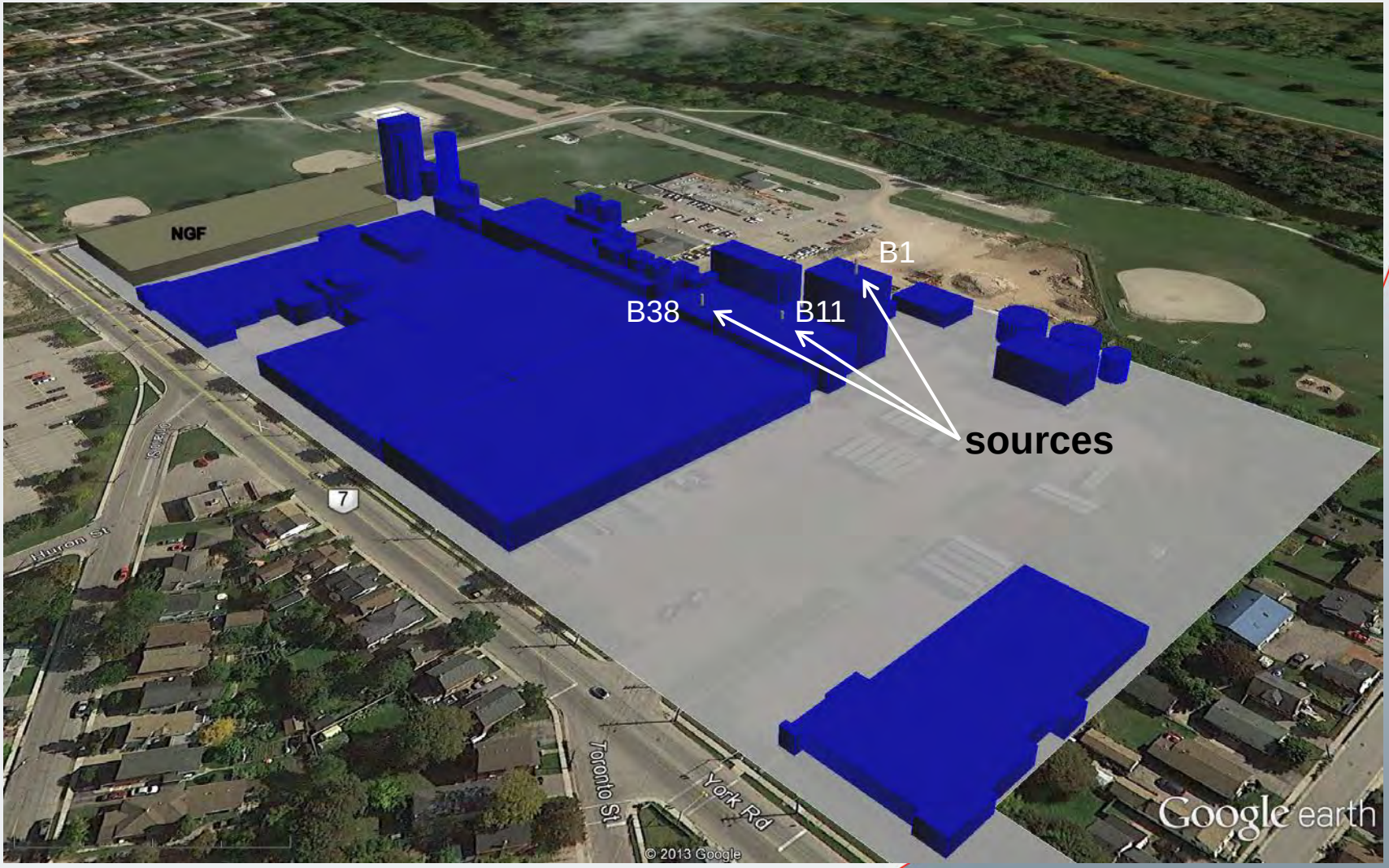
Appendix B **Process Flow Diagrams & Site Drawings**

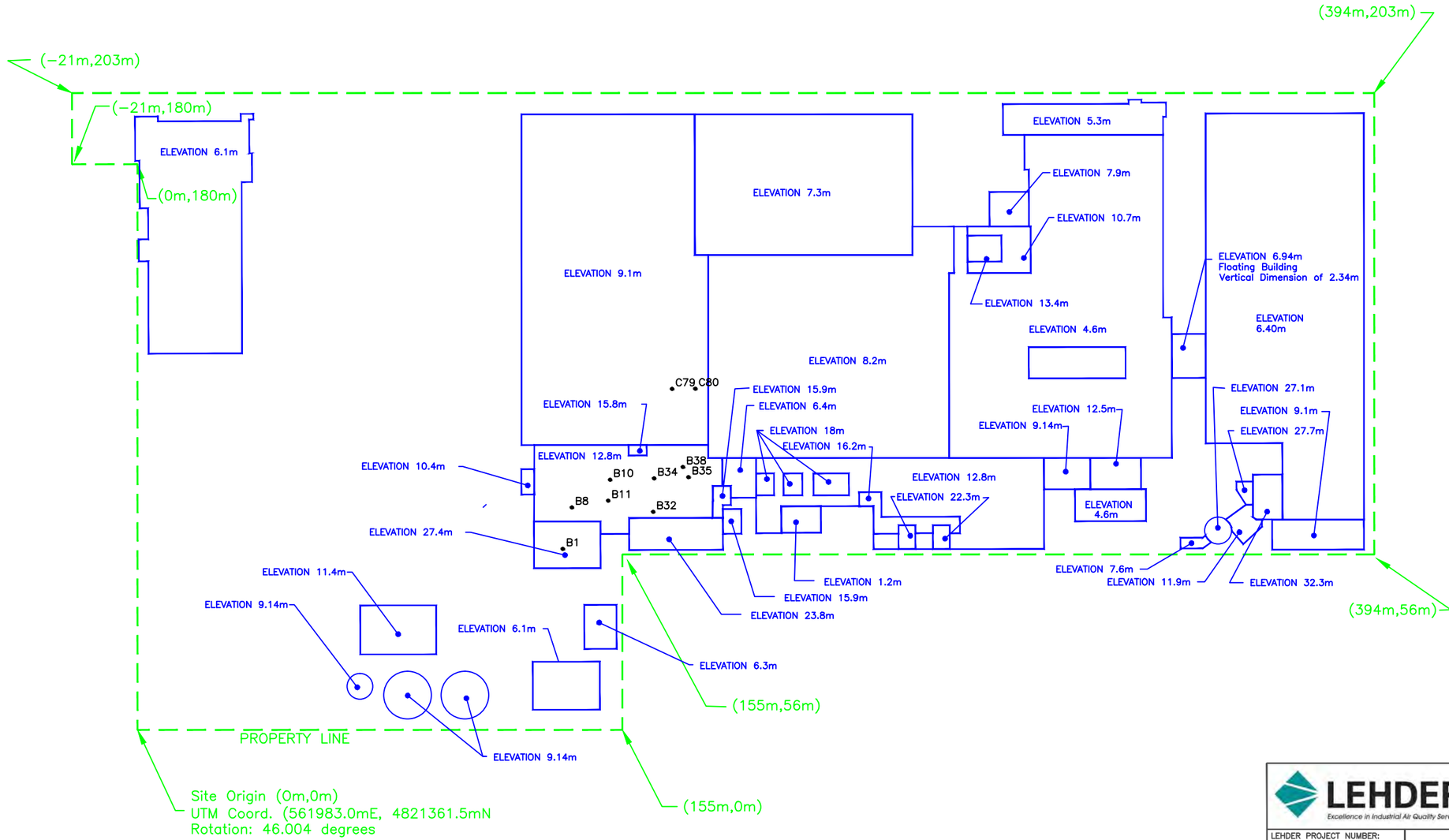
See Appendix Q for additional confidential items

Facility Location



3D Facility Overview





LEHDER
Excellence in Industrial Air Quality Services ®

LEHDER ENVIRONMENTAL SERVICES
704 MARA STREET, SUITE 210
POINT EDWARD, ON N7V 1X4
T 519-336-4101 F 519-336-4311
www.lehder.com

LEHDER PROJECT NUMBER: 144539	GUELPH GLASS PLANT OWENS CORNING CANADA
DATE: July 2014	
LEHDER DRAWING NUMBER: B−044112_HCR	SITE PLAN AND HEXAVALENT CHROMIUM SOURCE INVENTORY

0 25m 50m 75m 100m

SCALE: 1:1500 (1mm=1.5meter)

CAMM Plan / Source Testing Plan

Appendix C Full Scale Prototype Installations

OWENS CORNING CANADA
GUELPH GLASS PLANT
P.O.BOX3603
247 YORK ROAD
GUELPH, ONTARIO N1H 6P6
519.823.7219

Mr. Kevin Noll
Senior Environmental Officer
Ministry of Environment
Guelph District Office
West Central Region
1 Stone Road West, 4th Floor
Guelph, ON, N1G 4Y2

September 19, 2013

Dear Mr. Noll

This letter is in response to your request for Owens Corning to detail recent technology deployments aimed at reducing chromium emissions from our Guelph Facility.

During a recent capital investment at our facility, we installed three prototype technologies in an attempt to reduce chromium emissions from our facility. We are currently in the final stages of commissioning these technologies. In summary, they include:

1) **Modified refractory chemistry:** We believe the main source of chromium emissions from our process is the sublimation of this material from its solid form into a gaseous state due to the environment and temperature in which it operates. The supplier of our chromium bearing refractory material has been working to develop a new refractory that has increased resistance to sublimation. With an increased resistance to this reaction through a slightly altered composition, emissions should be reduced. During our recent project, we replaced the traditional material in the 105 Forehearth with this prototype material. This installation represents the first production scale manufacture by our supplier and first ever installation of this prototype material.

2) **Improved combustion ratio control:** The environment in which our refractory operates is largely the products of natural gas combusted in an essentially oxygen atmosphere. Excess oxygen in the combustion process that would be present in this operating environment is believed to increase the rate of refractory sublimation. Insufficient oxygen in the combustion process leads to a corrosive operating environment resulting from the incomplete combustion of natural gas. Historical combustion controls did not allow for precise oxygen/gas ratio control leading to an operational set up of high excess oxygen to provide a margin of safety to prevent from operating with an oxygen deficient ratio. During our recent project, we installed combustion controls that allow much more precise combustion control providing the ability to operate closer to ideal combustion. With reduced excess oxygen in the operating environment, the rate of sublimation should reduce, leading to lower emissions. These controls were developed and trialed internal to Owens Corning. This installation is the first production scale use of the equipment.

3) **Improved sealing of the refractory package:** Traditional furnace construction consists of a refractory package constructed of individual blocks approximately the size of a typical exterior brick found in residential construction. This results in a significant number of joints that must be mortared using an appropriate material. However, in the event of craftsmanship issues or natural degradation of the mortar over time, these joints provide a potential pathway for ambient air ingress into the process. When this happens, the operating environment sees an increase in oxygen, potentially resulting in an increased rate of sublimation and emission. During our recent project, we installed a castable refractory seal around our system to dramatically reduce the potential for air ingress. This leads to greater assurance of avoiding excess oxygen in the operating environment. This installation was the first of its kind in our business.

As mentioned, each of these technologies are new and in the pilot stage. We are hopeful that, in combination, these changes will result in lower chromium emissions from our process. However, the potential success of these efforts is, at best, unpredictable at this time.

If you have further questions around our activities, please do not hesitate to contact me.

Sincerely

Robert Nixon
Maintenance & Engineering Leader
Owens Corning - Guelph Glass Plant

CAMM Plan / Source Testing Plan

Appendix D **Summary of Historical Testing and Production Rates**

See Appendix Q for additional confidential items

September 3, 2014
Project No.: 144539B

Guillermo Azocar
Source Assessment Specialist
Technology Standards Section
Standards Development Branch
40 St. Clair Ave. West, 7th Floor
Toronto, ON M4V 1M2

Re-Testing to Evaluate Hexavalent Chromium Emissions at Owens Corning Guelph Facility

LEHDER Environmental Services Limited (LEHDER) conducted a source emission survey at the Owens Corning Glass Plant in Guelph, Ontario on June 12, 2014. During the survey, three sources from the 107 furnace/forehearth were evaluated for emissions of hexavalent chromium in accordance with the accepted test protocol dated May 8, 2014. Notification of the date and location of the source testing was provided to the Ministry of Environment by LEHDER on May 27, 2014. Sampling was witnessed by Mr. Guillermo Azocar, Ms. Caitlyn Ruddy and Mr. Bruce Gillies over the course of the day.

After completion of testing, it was discovered that operating conditions which affect one of the three sources were not correct. Consequently, measured emissions from that source were not representative of typical/normal operations. The affected source was the 107 East Forehearth Stack (Source B38). This process condition has since been rectified and retesting of the source is proposed.

This represents formal notification for the retesting of Source B38 at the target process setpoint. Hexavalent chromium sampling will be carried out using the same protocol used for the June 2014 survey (i.e. USEPA Method 0061). Three test runs, each 72 minutes in duration, will be conducted. **The test date is Tuesday, September 16, 2014**. The LEHDER field leader is Mr. Guy Bastien (e-mail: gbastien@lehder.com). Please call me of Guy if you have any questions pertaining to this testing.

Respectfully submitted,

LEHDER Environmental Services

Mike Denomme

cc. Caitlyn Ruddy (MOE SDB)
Bruce Gillies (MOE SDB)
Rob Nixon (OC Guelph Glass)
Penny McInnis/Guy Bastien (LEHDER)

LEHDER Environmental Services Limited
704 Mara Street, Suite 210, Point Edward, Ontario, Canada N7V 1X4 Phone: (519) 336-4101 Fax: (519) 336-4311
9954 - 67th Avenue, Edmonton, Alberta, Canada T6E 0P5 Phone: (780) 462-4099 Fax: (780) 462-4392
www.lehder.com

Appendix Q **CONFIDENTIAL**

LEHDER