

K. I. SAWYER MI

Latitude = 46.35 N

Longitude = 87.40 W

Period of Record = 1966 to 1995

WMO No. 727435

Elevation = 1221 feet

Average Pressure = 28.62 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	92	72	92	11.9	SSW
0.4% Occurrence	86	70	89	11.3	SSW
1.0% Occurrence	82	67	83	10.6	SSW
2.0% Occurrence	79	66	79	10.2	SSW
Mean Daily Range	18	-	-	-	-
97.5% Occurrence	-1	-2	4	6.4	W
99.0% Occurrence	-7	-8	3	6.1	W
99.6% Occurrence	-12	-12	2	5.4	W
Median of Extreme Lows	-18	-18	1	5.4	W
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	77	87	126	10.8	SSW
0.4% Occurrence	72	81	107	10.1	SSW
1.0% Occurrence	70	78	101	9.5	SSW
2.0% Occurrence	68	75	95	8.7	SSW
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	130	80	0.82	7.9	SSW
0.4% Occurrence	113	77	0.72	8.2	SSW
1.0% Occurrence	104	74	0.67	7.8	SSW
2.0% Occurrence	97	73	0.62	8.3	SSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		4	149	31	257

Other Site Data

Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
5	2.3	90	0.3 + 0.1
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
42.0	102	60	65

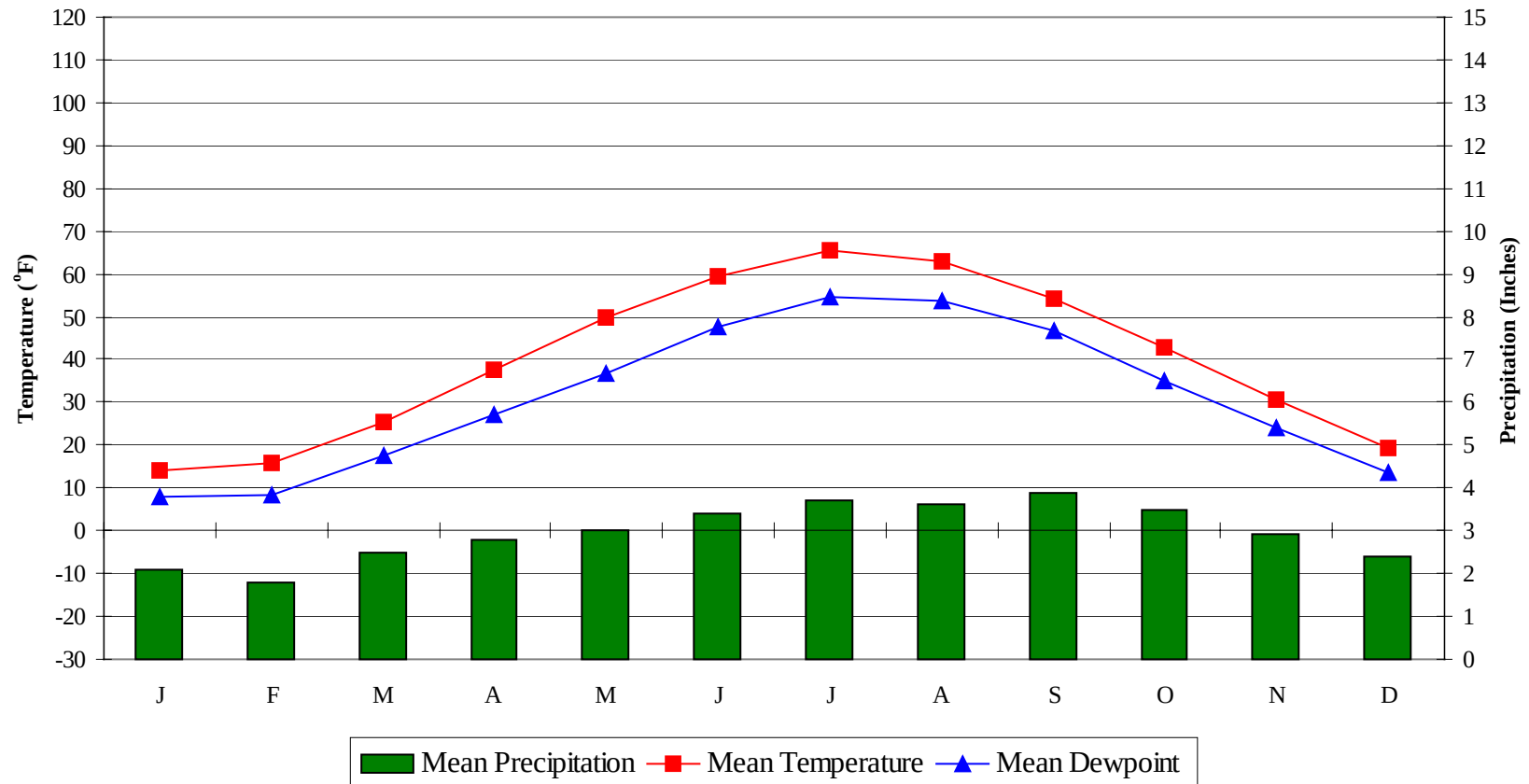
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

K. I. SAWYER

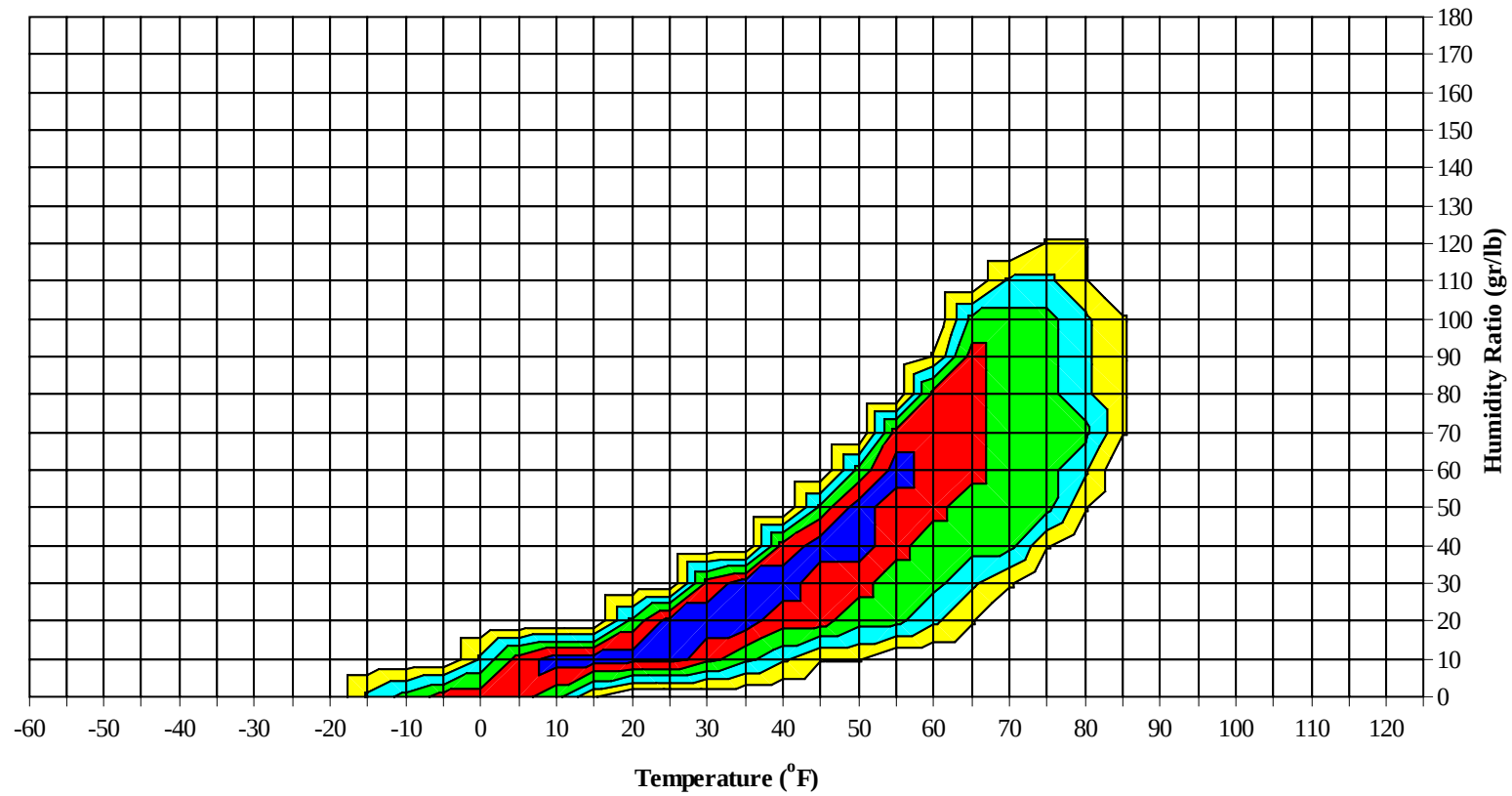
MI

WMO No. 727435

Average Annual Climate

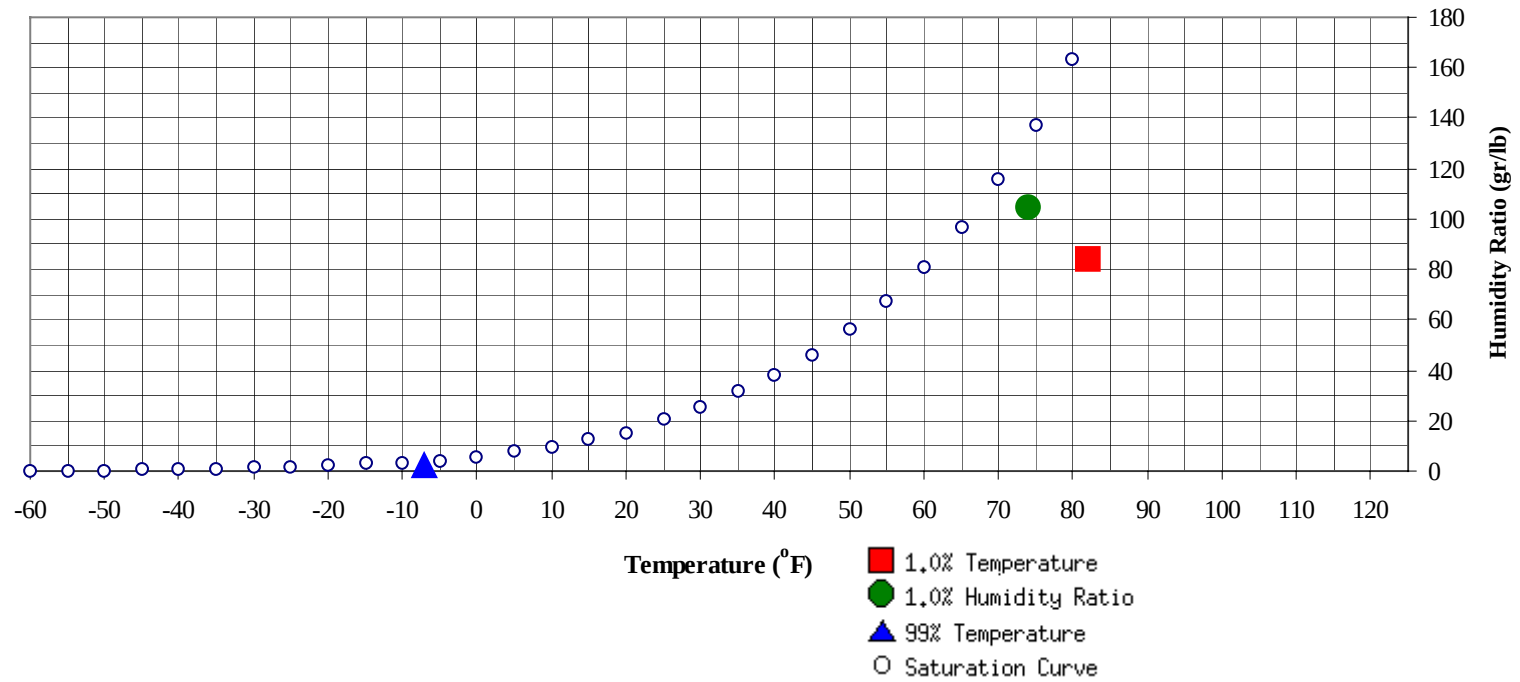


Long Term Psychrometric Summary



- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

Psychrometric Summary of Peak Design Values



99% Dry Bulb	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
	-7	2.7	-1.3		104.3	74	69.1	66.9	34.1

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	82	83.7	67.5	32.8

K. I. SAWYER MI

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1966 to 1995

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69												0	0	0	55.8
60 / 64												1	0	1	50.0
55 / 59											0	2	1	3	47.7
50 / 54							0	0	0	41.6	0	5	2	7	43.0
45 / 49		0	0	0	38.3		1	1	2	38.3	1	9	7	17	40.5
40 / 44	0	2	1	3	36.4	0	5	3	8	35.7	6	20	14	40	37.4
35 / 39	2	6	5	13	33.3	4	11	9	24	33.1	13	34	29	76	33.3
30 / 34	14	21	20	55	29.9	15	21	20	56	29.4	42	52	49	144	29.5
25 / 29	25	29	28	82	25.4	22	31	30	83	24.8	50	43	49	143	24.9
20 / 24	34	42	40	116	20.6	29	36	34	99	20.1	35	32	34	101	20.2
15 / 19	37	43	39	119	15.7	33	37	33	103	15.4	32	25	28	85	15.4
10 / 14	33	41	36	110	10.8	32	31	33	96	10.7	23	16	17	56	10.9
5 / 9	31	25	30	86	6.1	24	23	24	71	6.0	16	5	9	30	6.1
0 / 4	27	19	22	68	1.0	23	14	19	56	1.2	14	3	5	22	1.3
-5 / -1	14	9	12	35	-3.2	15	6	9	30	-3.2	8	1	2	11	-3.0
-10 / -6	15	6	10	31	-7.6	14	4	6	24	-7.3	3	0	1	4	-7.1
-15 / -11	10	3	4	17	-12.0	8	2	3	13	-12.2	2	0	0	2	-12.3
-20 / -16	4	1	1	6	-16.7	4	1	1	6	-17.1	1		0	1	-16.8
-25 / -21	1	0	0	1	-21.0	1	0		1	-21.3	0			0	-20.6
-30 / -26						0	0		0	-27.0					
-35 / -31						0			0	-30.0					

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

K. I. SAWYER MI

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Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1966 to 1995

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99												0		0	68.6
90 / 94							0	0	0	68.5		2	1	3	69.6
85 / 89		0	0	0	68.3		2	1	3	65.7	0	6	2	8	68.8
80 / 84		1	0	1	66.6		7	2	9	64.6	0	16	5	21	65.5
75 / 79		2	1	3	61.2	0	13	5	18	60.9	1	27	12	40	63.4
70 / 74	0	3	2	5	58.5	1	19	10	30	58.6	4	39	22	66	60.8
65 / 69	0	7	3	10	54.9	3	26	17	46	56.0	14	44	36	95	58.4
60 / 64	1	9	7	17	51.4	10	31	26	68	52.8	34	39	46	119	55.8
55 / 59	3	15	10	28	48.0	21	33	29	84	49.7	45	32	43	120	52.0
50 / 54	8	22	15	45	44.5	31	33	32	97	45.7	58	22	37	117	48.2
45 / 49	13	32	25	70	40.7	40	35	41	117	42.2	40	10	22	72	44.2
40 / 44	24	39	34	97	37.1	45	27	36	108	38.1	27	3	11	41	39.8
35 / 39	44	42	45	131	33.3	43	15	26	84	33.9	13	0	2	15	35.3
30 / 34	57	39	53	149	29.5	34	6	15	55	29.5	3		0	3	31.1
25 / 29	46	18	29	93	25.0	14	1	6	21	25.0	0			0	26.4
20 / 24	27	8	12	47	20.4	4		0	4	21.0					
15 / 19	10	1	4	15	16.1	1			1	17.5					
10 / 14	5	0	1	6	11.0										
5 / 9	2	0	0	2	6.2										
0 / 4	0			0	3.0										
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															

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K. I. SAWYER MI

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1966 to 1995

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99		1	0	1	71.9		0	0	0	74.0					
90 / 94		4	2	6	72.7		2	1	3	72.5		0		0	71.8
85 / 89		11	5	16	70.9		6	2	8	70.3		1	0	1	72.6
80 / 84	0	29	14	43	68.1	0	20	7	27	68.1		4	1	5	68.6
75 / 79	2	47	26	76	65.5	0	37	17	54	65.7	0	12	4	16	65.0
70 / 74	12	56	41	110	63.0	8	53	35	96	63.6	1	21	11	33	62.4
65 / 69	39	47	52	139	60.8	27	54	51	132	61.3	8	31	22	61	60.2
60 / 64	57	34	47	138	57.3	52	43	55	150	57.8	22	43	35	100	56.8
55 / 59	60	13	35	109	53.7	61	25	43	129	53.9	38	48	44	130	53.0
50 / 54	41	5	17	63	49.5	51	9	23	83	49.7	48	43	47	138	48.7
45 / 49	25	1	6	32	45.0	29	1	9	39	45.1	49	25	38	112	44.5
40 / 44	9	0	1	10	40.7	13		3	16	40.5	35	11	23	69	40.0
35 / 39	1		0	1	36.2	5		0	5	36.1	25	2	11	38	35.6
30 / 34	0			0	32.5	1			1	31.4	13	0	3	16	31.2
25 / 29											2		0	2	26.9
20 / 24											0			0	22.4
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															

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K. I. SAWYER MI

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1966 to 1995

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89		0		0	60.0										
80 / 84		0		0	63.2										
75 / 79		1	0	1	62.4										
70 / 74		3	1	4	60.1										
65 / 69	1	8	3	12	57.0		1	0	1	53.9					
60 / 64	3	17	9	29	54.4		1	0	1	50.6					
55 / 59	8	25	17	50	51.2	0	3	2	5	50.4	0	0	0	0	54.6
50 / 54	19	38	31	88	47.4	3	8	4	15	47.8	0	1	0	1	49.9
45 / 49	34	45	42	120	43.3	7	15	9	31	43.4	0	1	0	1	41.9
40 / 44	43	48	47	138	39.0	15	22	21	58	38.9	1	3	1	5	38.1
35 / 39	50	39	49	138	34.5	30	42	37	109	34.4	6	11	9	26	34.3
30 / 34	56	21	37	114	30.1	61	63	62	186	29.7	26	36	32	94	30.1
25 / 29	24	4	11	39	25.8	53	44	50	147	25.0	41	43	44	129	25.4
20 / 24	8	0	1	9	21.2	33	22	29	84	20.5	44	51	46	142	20.5
15 / 19	2	0	0	2	17.0	21	13	13	47	15.8	39	41	40	120	15.8
10 / 14						8	4	8	20	11.3	31	27	30	88	10.9
5 / 9						6	2	3	11	6.4	20	17	19	56	6.1
0 / 4						3	1	1	5	1.8	17	10	14	41	1.2
-5 / -1						1	0	0	1	-2.7	9	4	6	19	-3.0
-10 / -6						0			0	-6.0	9	2	4	15	-7.3
-15 / -11											3	1	1	5	-12.2
-20 / -16											1	0	0	1	-16.4
-25 / -21											0	0		0	-21.7
-30 / -26															
-35 / -31															

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K. I. SAWYER MI

WMO No. 727435

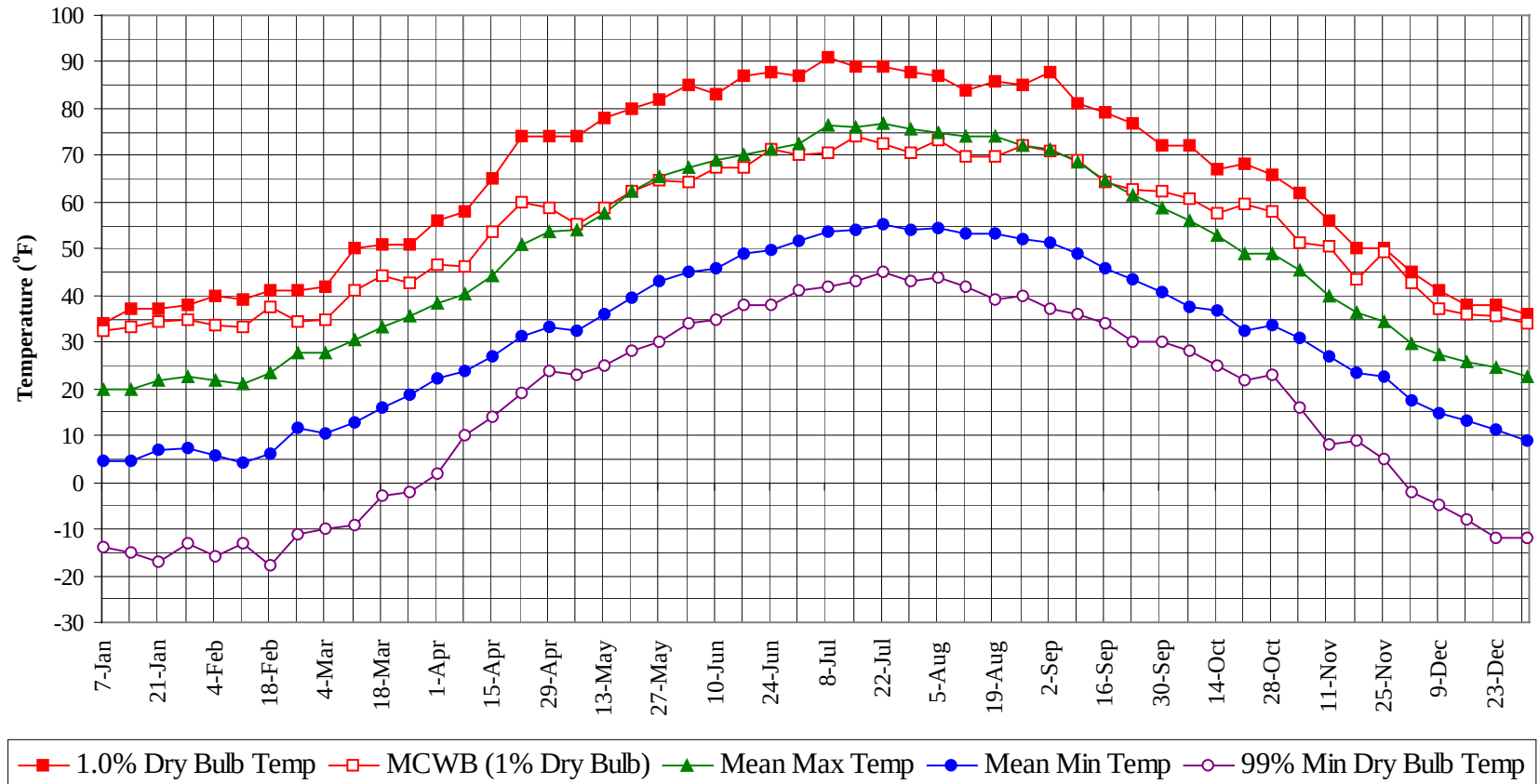
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1966 to 1995

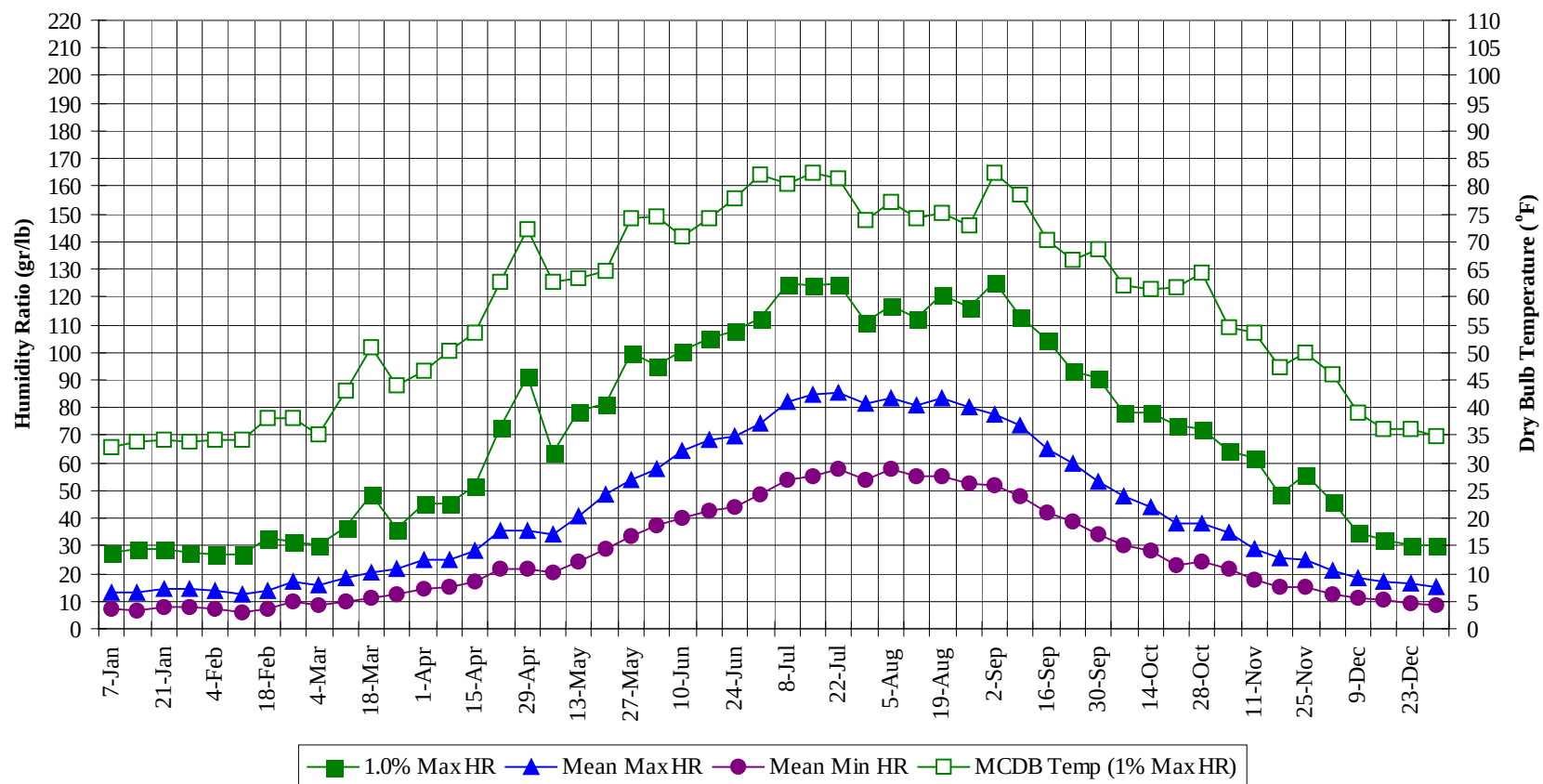
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		1	0	1	71.8
90 / 94		8	3	11	71.9
85 / 89	0	25	9	34	70.0
80 / 84	0	74	28	102	67.3
75 / 79	3	136	64	204	64.6
70 / 74	25	190	118	334	62.3
65 / 69	89	214	181	484	59.7
60 / 64	175	215	220	610	56.3
55 / 59	230	194	220	644	52.3
50 / 54	256	185	206	646	47.8
45 / 49	233	173	198	604	43.2
40 / 44	214	180	195	589	38.6
35 / 39	236	202	225	663	34.0
30 / 34	325	262	295	882	29.7
25 / 29	281	215	253	748	25.1
20 / 24	219	195	203	617	20.4
15 / 19	179	163	162	504	15.6
10 / 14	136	121	128	386	10.8
5 / 9	102	75	88	265	6.1
0 / 4	87	48	63	198	1.2
-5 / -1	49	21	30	100	-3.1
-10 / -6	42	14	22	78	-7.4
-15 / -11	24	6	8	38	-12.1
-20 / -16	10	2	2	14	-16.8
-25 / -21	2	0	0	2	-21.1
-30 / -26	0	0		0	-27.0
-35 / -31	0			0	-30.0

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

Annual Summary of Temperatures

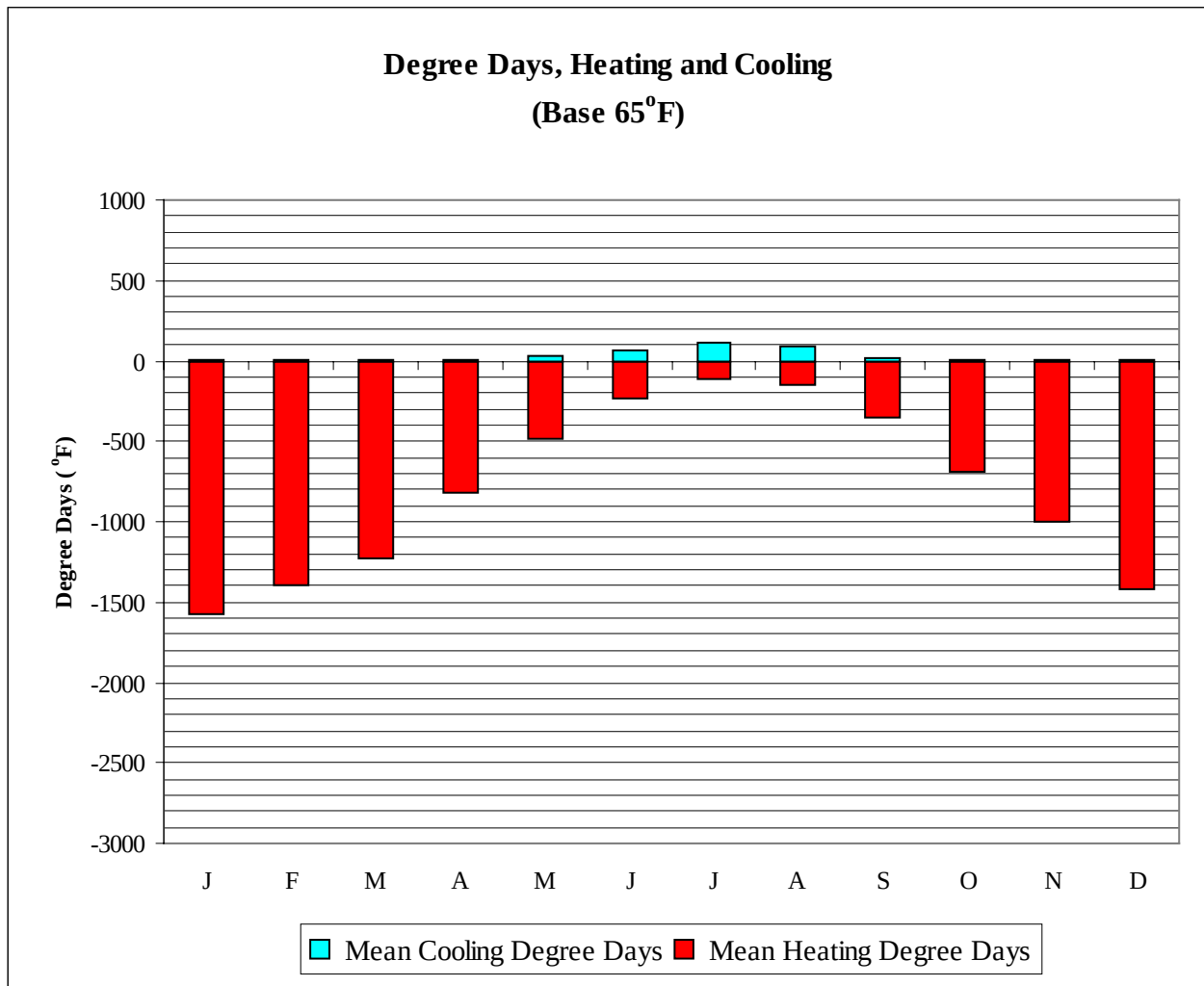


Long Term Humidity and Dry Bulb Temperature Summary



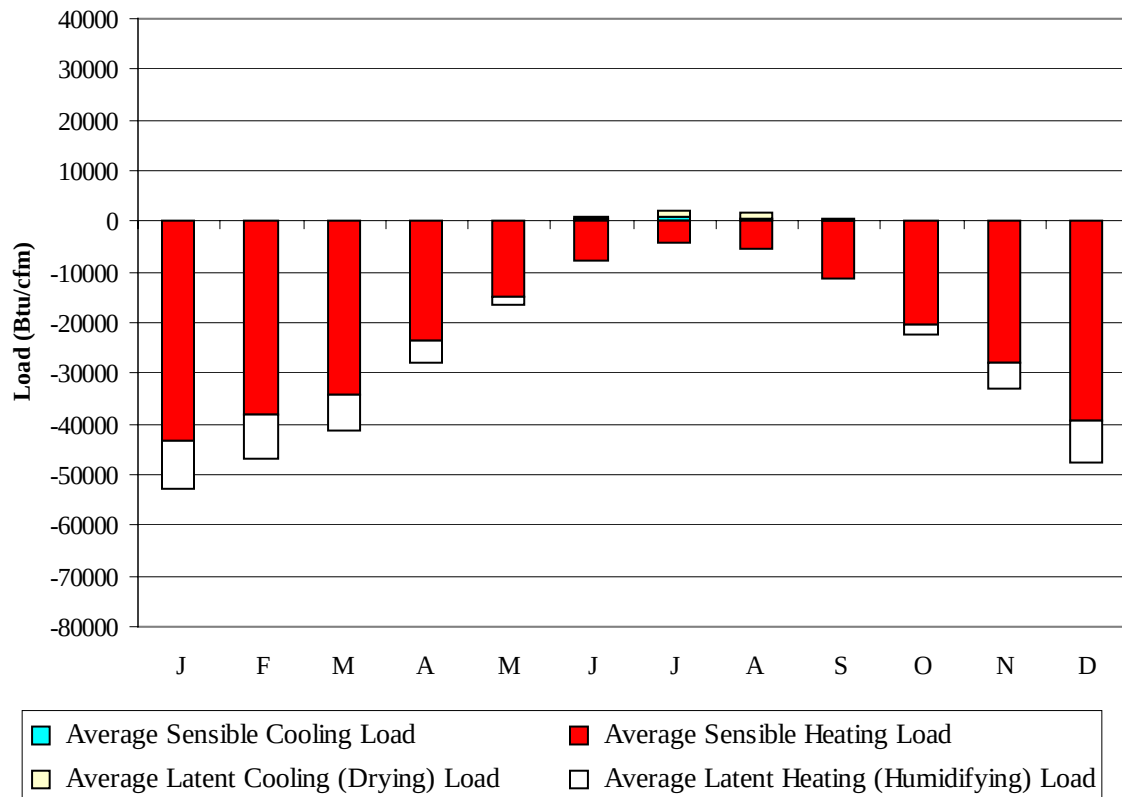
K. I. SAWYER**MI****WMO No. 727435****Long Term Dry Bulb Temperature and Humidity Summary**

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	34.0	32.4	19.9	4.7	-14.0	27.3	33.0	13.4	7.0
14-Jan	37.0	33.1	19.7	4.4	-15.0	28.7	33.9	13.2	6.7
21-Jan	37.0	34.4	21.9	6.8	-17.0	28.7	34.2	14.2	7.8
28-Jan	38.0	34.9	22.5	7.2	-13.0	27.3	33.9	14.7	7.6
4-Feb	40.0	33.6	21.9	5.8	-16.0	26.6	34.2	13.7	7.0
11-Feb	39.0	33.3	20.9	4.1	-13.0	26.6	34.1	12.5	6.2
18-Feb	41.0	37.5	23.3	6.0	-18.0	32.9	38.1	14.0	7.4
25-Feb	41.0	34.5	27.5	11.6	-11.0	31.5	38.1	17.1	9.9
4-Mar	42.0	34.8	27.6	10.3	-10.0	30.1	35.2	15.9	8.4
11-Mar	50.0	40.9	30.6	12.7	-9.0	37.1	43.0	18.6	10.1
18-Mar	51.0	44.2	33.1	16.0	-3.0	48.3	50.8	20.4	11.4
25-Mar	51.0	42.6	35.5	18.8	-2.0	36.4	43.9	21.8	12.7
1-Apr	56.0	46.7	38.4	22.1	2.0	45.5	46.6	25.0	14.4
8-Apr	58.0	46.0	40.4	23.8	10.0	45.5	50.1	24.9	14.9
15-Apr	65.0	53.5	44.1	26.8	14.0	51.8	53.6	27.9	17.0
22-Apr	74.0	60.0	50.7	31.3	19.0	72.8	62.6	35.4	21.4
29-Apr	74.0	58.8	53.9	33.2	24.0	91.0	72.4	35.6	21.5
6-May	74.0	55.2	53.9	32.4	23.0	63.7	62.6	34.1	20.1
13-May	78.0	58.9	57.8	35.9	25.0	79.1	63.3	40.8	24.5
20-May	80.0	62.4	62.4	39.5	28.0	81.2	64.8	48.4	28.8
27-May	82.0	64.7	65.3	43.0	30.0	100.1	74.1	53.7	33.7
3-Jun	85.0	64.3	67.4	45.2	34.0	95.2	74.4	58.0	37.6
10-Jun	83.0	67.5	69.1	45.9	35.0	100.8	70.8	64.1	39.8
17-Jun	87.0	67.4	70.3	48.8	38.0	105.0	74.2	68.6	42.9
24-Jun	88.0	71.2	71.5	49.7	38.0	107.8	78.0	69.4	43.9
1-Jul	87.0	70.2	72.6	51.8	41.0	112.0	82.1	73.9	48.8
8-Jul	91.0	70.6	76.3	53.7	42.0	124.6	80.3	82.1	54.0
15-Jul	89.0	74.1	76.0	54.1	43.0	123.9	82.4	84.8	55.0
22-Jul	89.0	72.5	77.0	55.3	45.0	124.6	81.4	85.5	57.7
29-Jul	88.0	70.7	75.8	54.2	43.0	111.3	73.9	81.1	54.1
5-Aug	87.0	73.3	74.9	54.6	44.0	116.9	77.1	83.7	57.7
12-Aug	84.0	69.8	74.0	53.4	42.0	112.0	74.4	80.9	55.3
19-Aug	86.0	69.7	74.0	53.3	39.0	121.1	75.2	83.5	55.3
26-Aug	85.0	72.1	72.1	52.2	40.0	116.2	72.8	79.8	52.7
2-Sep	88.0	70.8	71.3	51.5	37.0	125.3	82.5	77.5	51.9
9-Sep	81.0	69.0	68.5	49.0	36.0	112.7	78.4	73.7	47.7
16-Sep	79.0	64.3	64.8	45.7	34.0	104.3	70.2	64.8	42.2
23-Sep	77.0	62.6	61.5	43.4	30.0	93.1	66.8	60.0	38.5
30-Sep	72.0	62.2	58.7	40.6	30.0	90.3	68.6	53.1	34.3
7-Oct	72.0	60.9	55.8	37.7	28.0	78.4	61.9	48.2	30.0
14-Oct	67.0	57.4	52.9	36.6	25.0	78.4	61.4	44.1	28.5
21-Oct	68.0	59.7	49.1	32.6	22.0	73.5	61.6	37.8	23.3
28-Oct	66.0	58.2	49.0	33.5	23.0	72.1	64.2	38.2	24.3
4-Nov	62.0	51.3	45.3	30.8	16.0	64.4	54.5	35.1	21.7
11-Nov	56.0	50.5	39.8	26.9	8.0	61.6	53.4	29.2	17.8
18-Nov	50.0	43.4	36.2	23.4	9.0	48.3	47.1	25.4	15.1
25-Nov	50.0	49.3	34.3	22.8	5.0	56.0	50.1	24.7	15.3
2-Dec	45.0	42.5	29.8	17.6	-2.0	46.2	46.0	21.3	12.4
9-Dec	41.0	37.1	27.3	14.9	-5.0	35.0	39.2	18.7	11.0
16-Dec	38.0	35.9	25.6	13.3	-8.0	32.2	36.2	17.2	10.2
23-Dec	38.0	35.7	24.5	11.3	-12.0	30.1	36.1	16.7	9.5
31-Dec	36.0	33.9	22.7	8.7	-12.0	30.1	34.7	15.0	8.3



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1577
FEB	0	1391
MAR	0	1230
APR	4	821
MAY	26	486
JUN	63	228
JUL	114	114
AUG	85	152
SEP	22	350
OCT	2	693
NOV	0	995
DEC	0	1423
ANN	316	9460

Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-43276	0	-9602
FEB	0	-38259	0	-8549
MAR	0	-34293	0	-7122
APR	14	-23559	19	-4223
MAY	129	-14743	88	-1777
JUN	375	-7581	415	-180
JUL	743	-4205	1371	-6
AUG	447	-5453	1357	-22
SEP	79	-11127	401	-289
OCT	5	-20340	4	-2056
NOV	0	-28028	0	-4939
DEC	0	-39302	0	-8384
ANN	1792	-270166	3655	-47149

Average Annual Solar Radiation – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

City: HOUGHTON
 State: MI
 WBAN No: 94814
 Lat(N): 47.17
 Long(W): 88.5
 Elev(ft): 1079

Stn Type: Secondary
 SHADING GEOMETRY IN DIMENSIONLESS UNITS
 Window: 1
 Overhang: 0.741
 Vert Gap: 0.327

AVERAGE INCIDENT SOLAR RADIATION (Btu/sq.ft./day), Percentage Uncertainty = 9		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Global	420	700	1120	1460	1740	1910	1900	1590	1140	730	420	340	1130
	Std Dev	53	81	106	104	153	144	91	115	98	51	40	46	42
	Minimum	320	550	890	1250	1460	1640	1740	1380	930	640	340	230	1040
	Maximum	490	820	1300	1670	2090	2220	2130	1800	1360	840	500	390	1190
	Diffuse	300	430	630	710	730	770	740	650	530	390	290	260	540
Clear Day	Global	620	990	1540	2110	2490	2650	2550	2180	1650	1090	680	520	1590
NORTH	Global	160	240	350	440	540	620	580	460	330	230	160	140	360
	Diffuse	160	240	350	430	480	520	500	430	330	230	160	140	330
Clear Day	Global	130	200	290	410	580	710	640	460	310	210	140	120	350
EAST	Global	290	470	720	920	1040	1120	1130	970	730	490	280	220	700
	Diffuse	200	300	440	520	560	600	590	520	410	280	190	170	400
Clear Day	Global	550	800	1130	1410	1540	1600	1550	1410	1160	850	580	470	1090
SOUTH	Global	690	940	1120	1050	950	900	950	1030	1020	910	600	530	890
	Diffuse	320	430	540	560	550	570	570	530	460	370	280	280	460
Clear Day	Global	1770	1990	2000	1660	1320	1170	1210	1470	1760	1890	1760	1640	1630
WEST	Global	300	470	730	900	1040	1130	1130	990	750	500	280	230	710
	Diffuse	200	300	450	520	570	610	600	530	410	290	190	170	410
Clear Day	Global	550	800	1130	1410	1540	1600	1550	1410	1160	850	580	470	1090

Average Annual Solar Heat and Illumination – Nearest Available Site

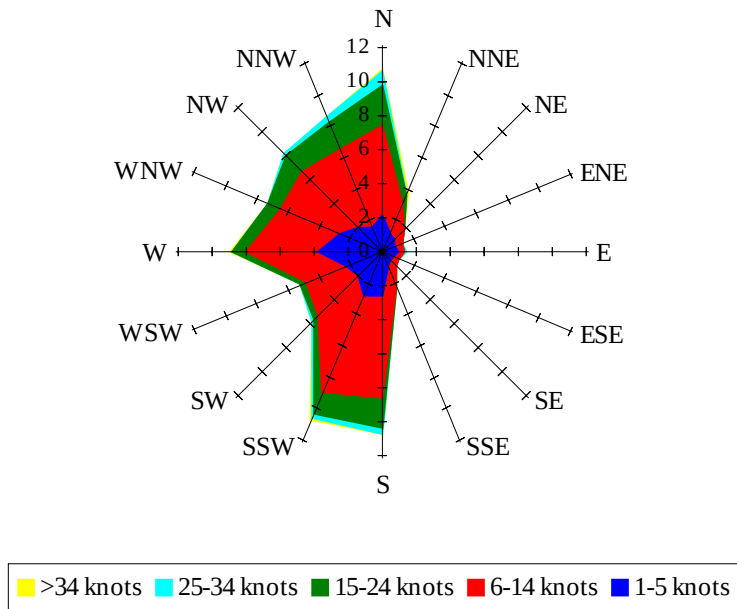
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Unshaded	270	460	770	1040	1250	1380	1370	1140	800	490	270	220	790
NORTH	Unshaded	110	170	250	300	350	410	380	300	230	160	110	95	240
	Shaded	87	130	200	250	300	340	320	260	190	130	87	73	200
EAST	Unshaded	200	330	510	660	740	800	800	700	520	340	190	150	490
	Shaded	160	270	410	520	580	620	630	550	420	280	160	130	390
SOUTH	Unshaded	520	700	800	710	620	570	600	680	710	670	450	400	620
	Shaded	490	620	580	400	320	330	330	340	460	560	410	370	430
WEST	Unshaded	200	330	520	640	740	810	800	710	530	350	200	160	500
	Shaded	170	270	420	510	580	630	630	560	430	290	160	130	400

AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9		March					June				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	19	53	71	66	39	33	69	90	94	79
	M.Cloudy	12	35	47	44	26	20	41	60	64	50
NORTH	M.Clear	6	12	14	13	10	20	14	16	16	15
	M.Cloudy	6	14	17	16	11	11	14	18	18	16
EAST	M.Clear	56	68	28	13	10	72	80	49	16	15
	M.Cloudy	17	31	22	16	11	26	38	34	18	16
SOUTH	M.Clear	22	66	89	83	48	9	28	52	57	40
	M.Cloudy	9	30	41	39	22	8	20	35	39	27
WEST	M.Clear	6	12	14	50	72	9	14	16	30	71
	M.Cloudy	6	14	17	28	29	8	14	18	26	40
M.Clear	(% hrs)	26	26	27	25	27	39	38	34	31	36
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	11	46	69	73	55	0	19	32	25	4
	M.Cloudy	6	25	42	45	32	0	13	20	17	3
NORTH	M.Clear	4	11	14	14	12	0	7	9	8	2
	M.Cloudy	3	10	15	15	12	0	6	9	7	2
EAST	M.Clear	38	73	46	14	12	0	36	15	8	2
	M.Cloudy	9	26	26	15	12	0	11	10	7	2
SOUTH	M.Clear	7	46	75	79	57	0	53	77	63	15
	M.Cloudy	4	19	36	39	26	0	15	23	19	4
WEST	M.Clear	4	11	14	31	68	0	7	9	32	17
	M.Cloudy	3	10	15	22	29	0	6	9	13	4
M.Clear	(% hrs)	33	33	31	29	32	12	13	13	12	15

Wind Summary - December, January, and February

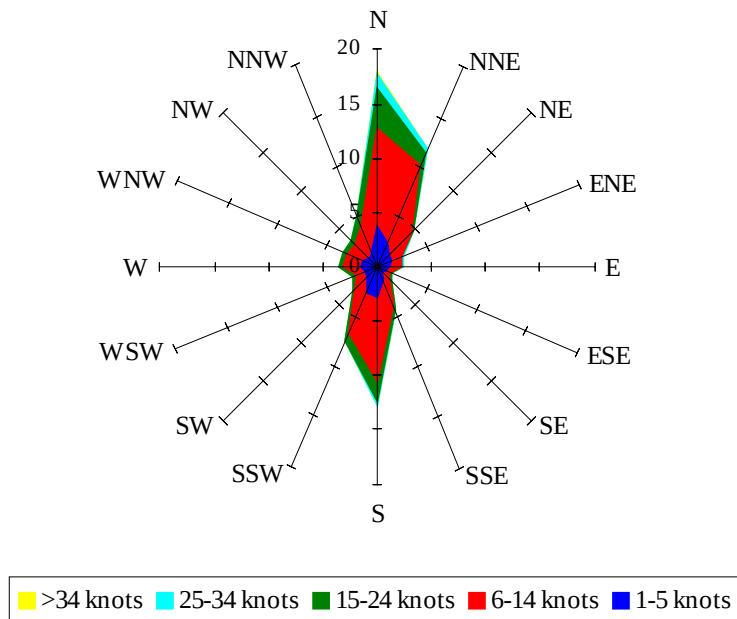
Labels of Percent Frequency on North Axis



Percent Calm = 11.70

Wind Summary - March, April, and May

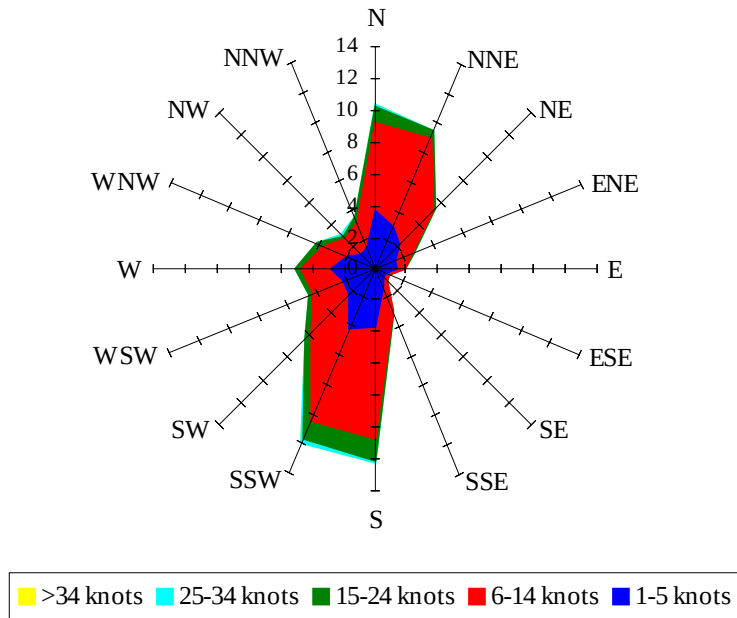
Labels of Percent Frequency on North Axis



Percent Calm = 11.98

Wind Summary - June, July, and August

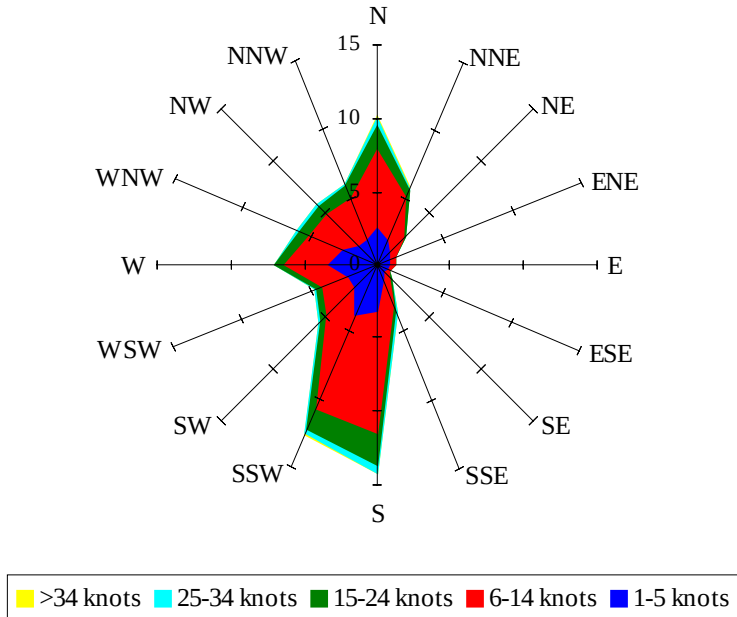
Labels of Percent Frequency on North Axis



Percent Calm = 14.58

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 11.80