



State of California  
California Environmental Protection Agency  
AIR RESOURCES BOARD

**Report on  
Pesticide Air Monitoring Around a Field Application  
of Chloropicrin  
In Santa Barbara County  
October 2005**

Prepared by  
Special Purpose Monitoring Section  
Air Quality Surveillance Branch  
Monitoring and Laboratory Division

August 7, 2006

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## Monitoring Report Approval

**Report Title:** Pesticide Air Monitoring Around a Field Application of Chloropircin In Santa Barbara County – October 2005

**Project Lead:** Steve Rider, Air Pollution Specialist

**Approval:** The following monitoring report has been reviewed and approved by the Monitoring and Laboratory Division.

Signatures:

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William V. Loscutoff, Chief Monitoring and Laboratory Division	Date

## Executive Summary

### **Report on Pesticide Air Monitoring Around a Field Application of Chloropicrin In Santa Barbara County – October 2005**

This report contains air monitoring results of a Chloropicrin field application. The Department of Pesticide Regulation (DPR) requested this monitoring in support of AB 1807/3219 which requires the Air Resources Board (ARB) to document the level of airborne emissions of pesticides which may be determined to pose a present or potential hazard. The air sampling occurred in Santa Barbara County from October 18 through October 22, 2005. Sampling was performed around an 8.2 acre field during and after the application of Tri-Chlor EC Fumigant (containing 94% Chloropicrin) at the rate of 200 pounds per acre. Drip irrigation pipes were used to apply fumigant under two layers of tarped beds. The ends of the tarped beds were covered with dirt. The fumigation was conducted on a field being prepared for the planting of strawberries.

Near the west side of the field, five minute average meteorological data was collected for wind speed, wind direction, percent relative humidity, temperature and barometric pressure. At least four days prior to the start of background sampling, no known Chloropicrin applications were performed within a half mile of the field. Background sampling was split between a 9.5 hour day-time and 14.1 hour night-time period, each period consisting of two duplicate samples and a 300 ng/sample field spike.

Upon completion of background sampling, the first of three day-time and three night-time sampling periods began. During the first day-time period, Tri-Chlor EC Fumigant was applied to the field between 9:20 am and 1:30 pm. Eight samplers (plus one collocated), arranged around the perimeter of the field, were used to characterize Chloropicrin concentrations during each day-time/night-time sampling period.

Including background samples and field spikes, a total seventy samples were collected during this field application. Laboratory field spike recovery results fell within  $\pm 7\%$  of expected except for the northeast field spike which was  $-20\%$ . The reported sample concentrations ranged from 0.3 to 415  $\mu\text{g}/\text{m}^3$  with the highest value occurring during the Chloropicrin application at the downwind site. All sixty-two ambient samples exceeded DPR's target Estimated Quantitation Limit (EQL) of 0.2  $\mu\text{g}/\text{m}^3$  for a twelve hour period.

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## I. INTRODUCTION

This report presents the results of pesticide air monitoring performed by the Special Purpose Monitoring Section (SPMS) and the Special Analysis Section (SAS) on an 8.2 acre field east of Santa Maria. The Monitoring and Laboratory Division (MLD) determined airborne concentrations of the pesticide chloropicrin collected around the perimeter of a “bed fumigation” *drip irrigation* application in Santa Barbara County. The field was being prepared for *planting* Strawberries. This Chloropicrin monitoring project was performed at the request of the California Department of Pesticide Regulation (DPR) per the Memorandum between Helliker and Loyd dated October 17, 2003. This monitoring was performed to fulfill the requirements of AB 1807/3219 (Food and Agricultural Code, Division 7, Chapter 3, Article 1.5) which requires the ARB “to document the level of airborne emissions...of pesticides which may be determined to pose a present or potential hazard...” when requested by the DPR.

The sampling and analysis followed the procedures outlined in the “Protocol for Air Monitoring Around a Field Application of Chloropicrin, 2005” dated September 27, 2005 (Appendix A). The grower of the original Salinas site changed his mind about where the application monitoring was to occur. This created changes to the protocol which included the relocation of the application site and the elimination of a second application site with a low permeable tarp.

## II. PERSONNEL

*The following* staff from SPMS and the Northern Laboratory Branch Special Analysis Section (NLB SAS) participated in the completion of this DPR request for monitoring the pesticide Chloropicrin:

Steve Rider, SPMS Project Lead  
916-327-4719

Michael Orbanosky, NLB SAS Project Chemist  
916-322-2367

Jack Romans, SPMS Field Lead  
916-327-4716

Matt Quok, Operation Support Section  
916-445-2555

Steve Aston, SPMS  
916-327-4724

Steve Rider was responsible for locating the application site, coordinating any preparations, QC/QA and the final report.

Jack Romans was responsible for protocol development and application site operations including sampler location, acquiring field measurements and sample collection.

Matt Quok and Steve Aston provided technical support for the installation and operation of the air monitoring equipment, acquiring field measurements and GPS data and developing sketches of the application site.

Michael Orbanosky was responsible for laboratory analysis of the collected cartridge samples, analytical quality control, preparation of field/trip spikes and reporting the laboratory results.

### **III. SAMPLING AND FIELD OPERATIONS**

Chloropicrin samples were collected at a flow rate of 100 standard cubic centimeters per minute on XAD-4 resin cartridges. Eight samplers were placed around the field, plus one collocated at the downwind site, approximately 20 meters from the edge of the field. The cartridges consisted of 400 mg of resin in the primary section and 200 mg of resin in the secondary section. After each sampling period, the cartridges were capped, labeled and placed on dry ice for stable storage until delivery to the laboratory. Sampling periods followed the one hour after sunrise and one hour before sunset criteria.

During this Chloropicrin application, there were two deviations to the “Protocol for Air Monitoring Around a Field Application of Chloropicrin” (Appendix A).

The first deviation to the sampling protocol was that the grower changed the application site from Salinas to Santa Maria. The Santa Maria property had less variation in elevation and was more remote than the Salinas site. In addition the applicator agreed to complete other Chloropicrin applications surrounding the application site at least four days prior to the first background sampling period. The last application of Chloropicrin within a half-mile of the monitored application site was on October 15, 2005.

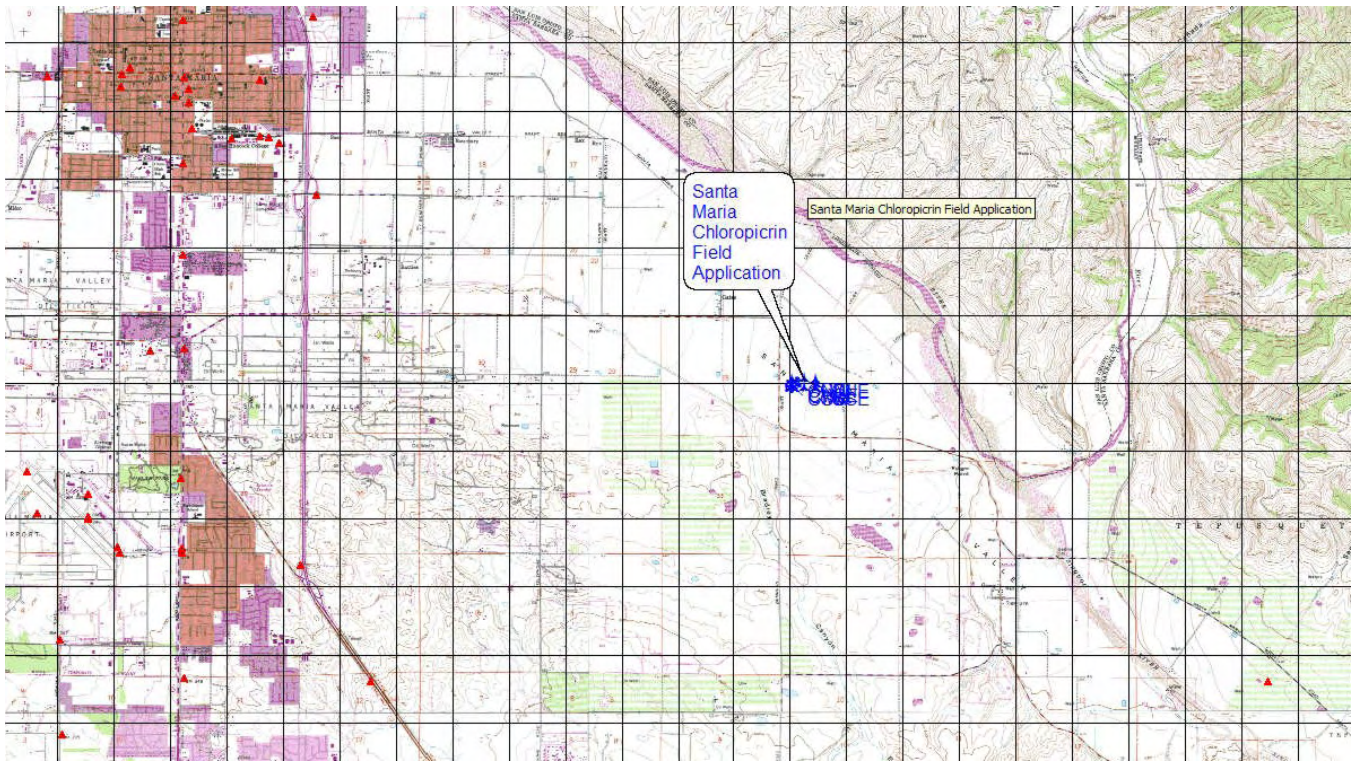
Secondly, SPMS had planned to monitor a second Chloropicrin application with a thicker, low permeable tarp. However, with the change of location from Salinas to Santa Maria and the surrounding applications needing to be completed to meet DPR’s requirements, the second application could not be scheduled.

One field observation was that the grower added an additional layer of tarp and dirt covering both ends of the beds within the application site. Previous Chloropicrin “bed fumigations” have had one layer of tarp over each bed with a layer of dirt placed over the two ends of each bed. Photos in Appendix E show that the fields that had Chloropicrin previously applied had just one layer of tarp over the beds with dirt thrown over both ends.

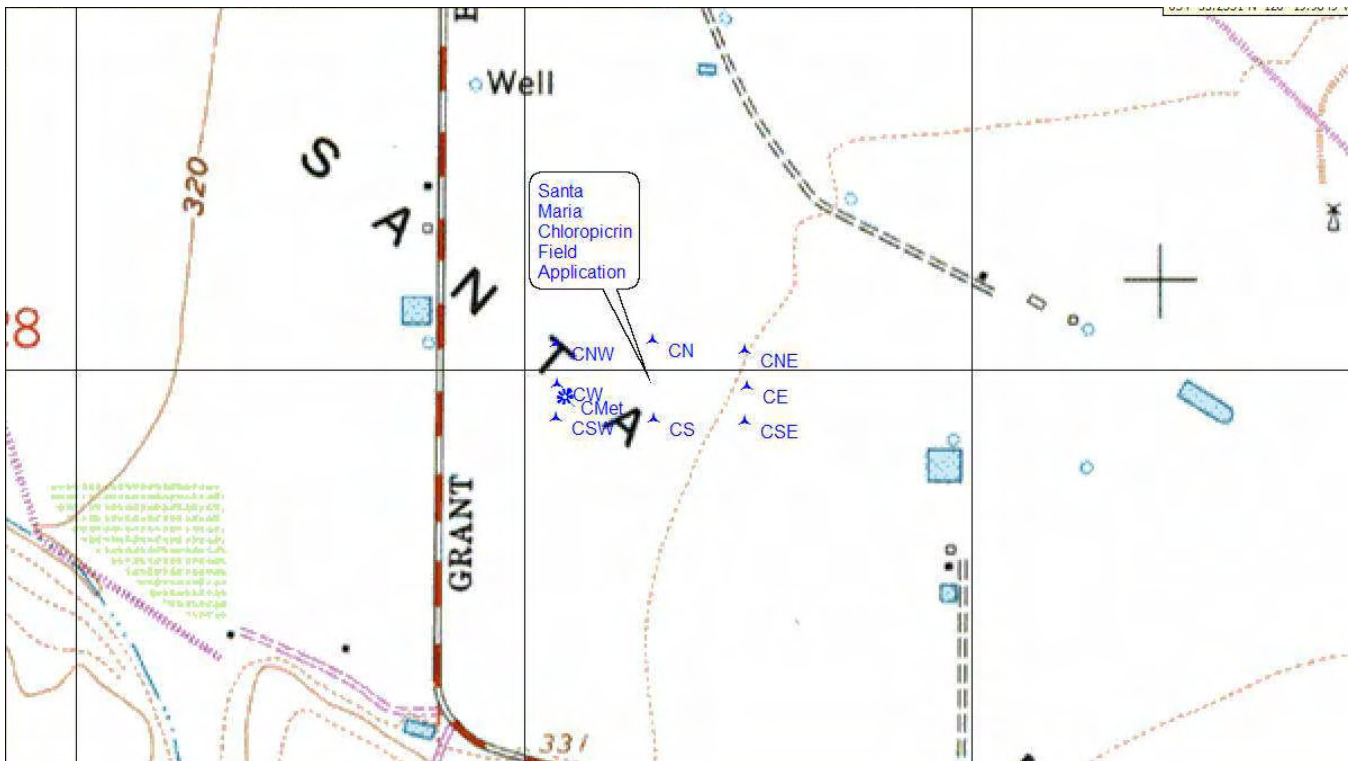
Located in Appendix E are additional photos, drawings, maps and ancillary documents regarding the application.

The following figures are topographical maps and aerial photos showing the area where sampling was performed. Figure 5 shows a sketch of the application site with sampler positions and dimensions.

**FIGURE 1 TWITCHELL DAM TOPO OVERVIEW OF MONITORED AREA**

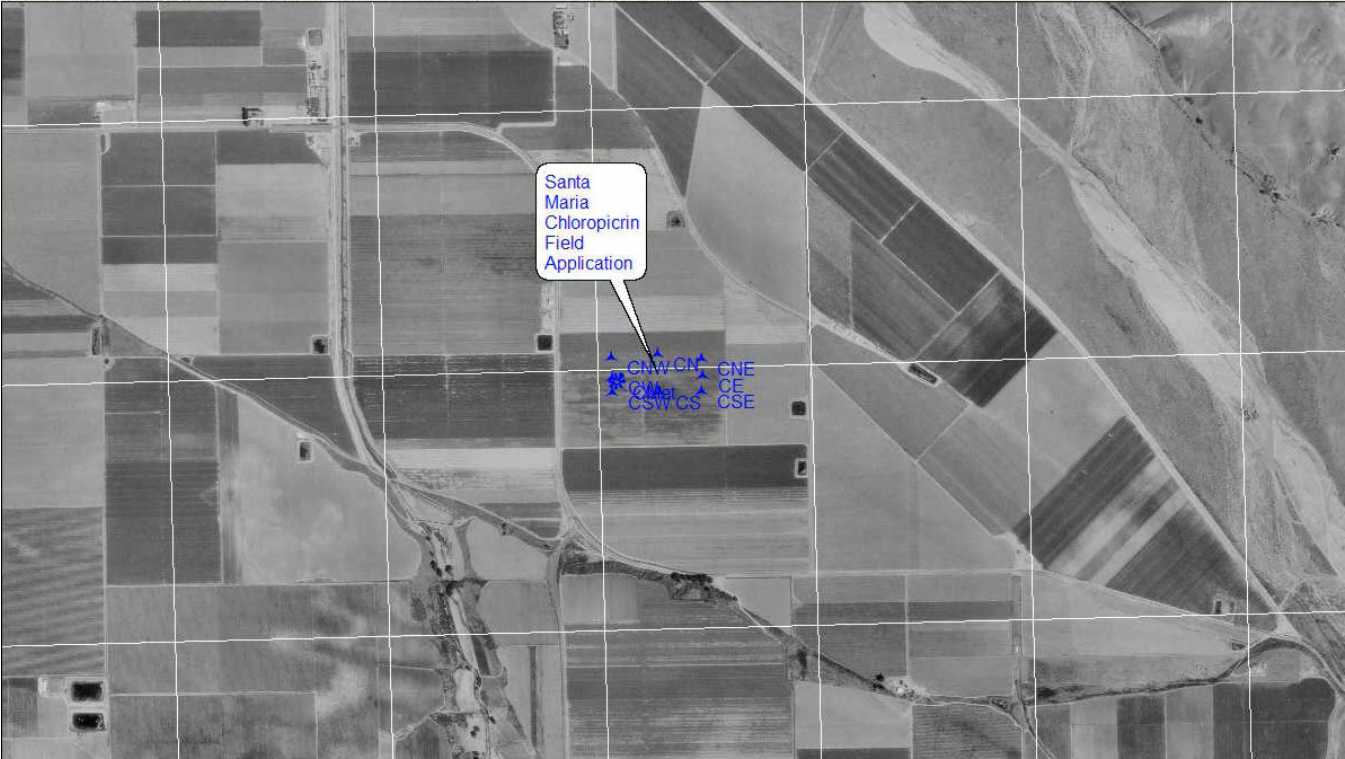


**FIGURE 2 TWITCHELL DAM TOPO CLOSEUP OF MONITORED AREA**

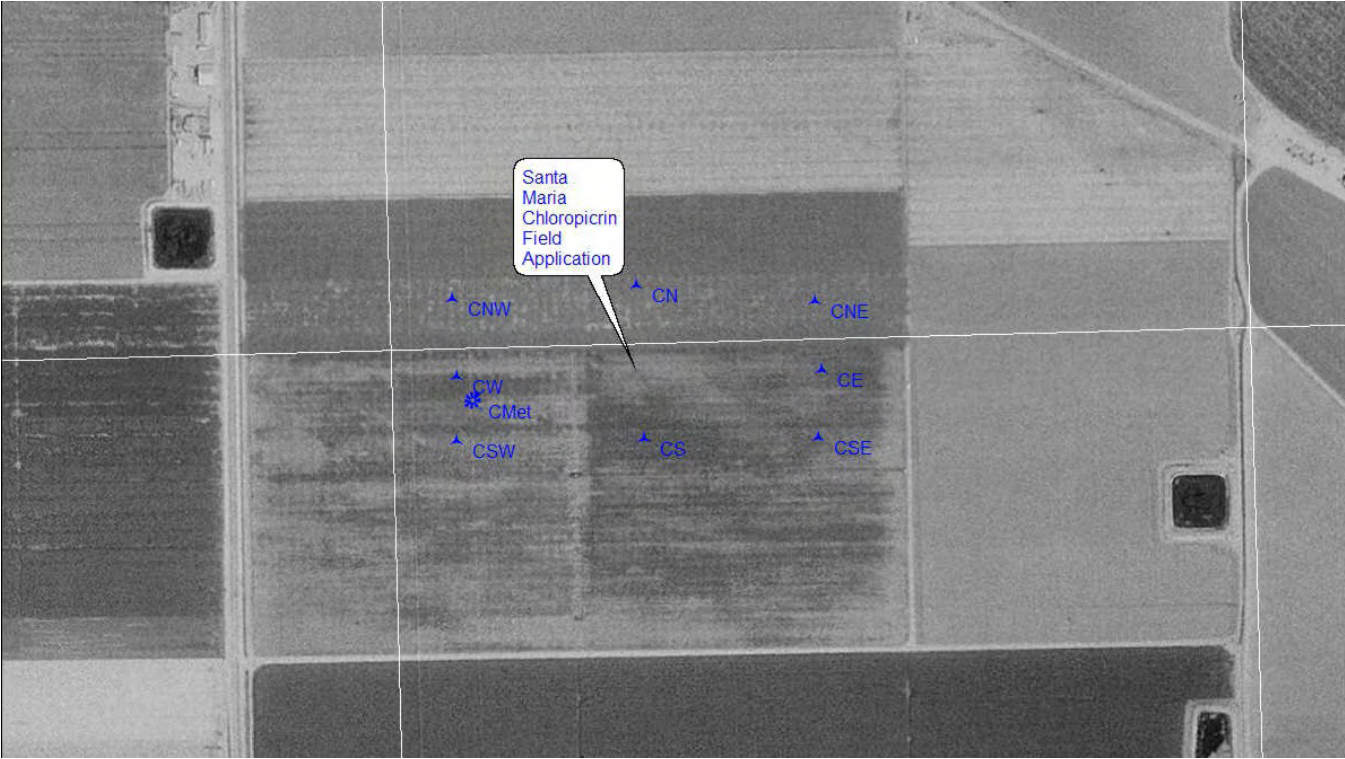




**FIGURE 3      AERIAL PHOTO OVERVIEW OF MONITORED AREA**



**FIGURE 4      AERIAL PHOTO OVERVIEW OF MONITORED AREA**



**FIGURE 5: FIELD SKETCH**

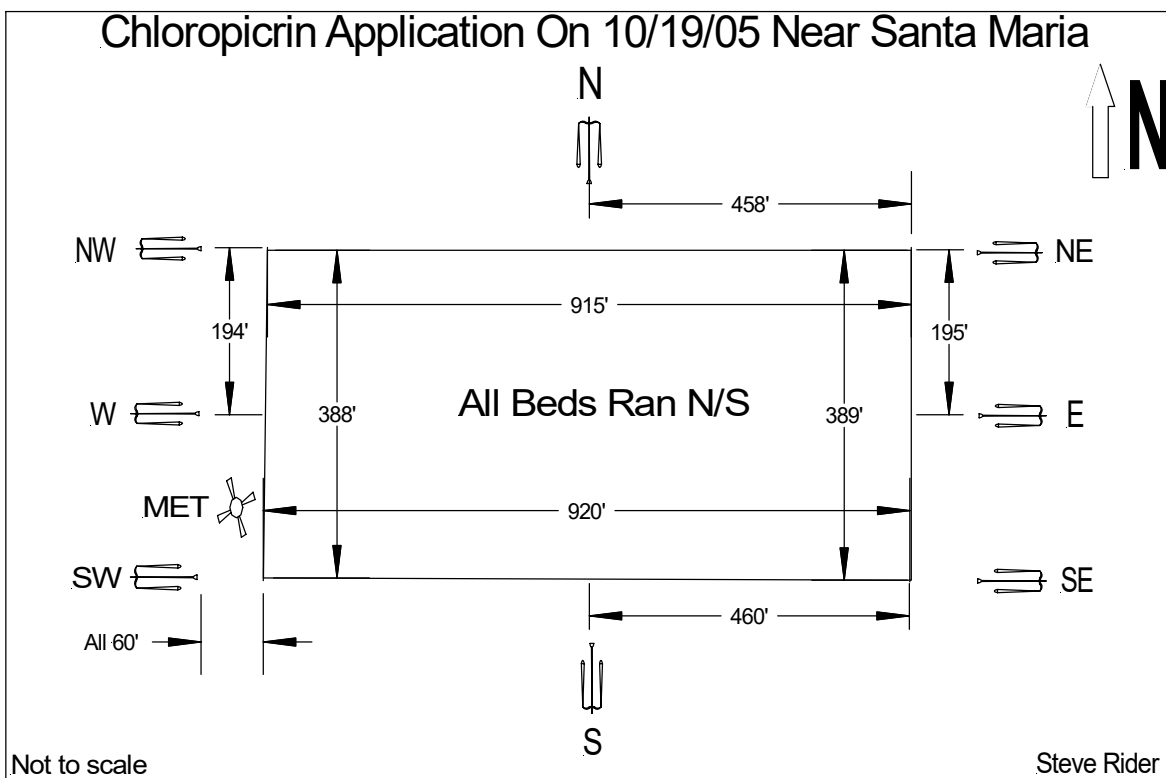


Table 1 lists the information on this Santa Maria Chloropicrin application.

**TABLE 1 APPLICATION INFORMATION**

Location	CA, Santa Barbara County, Santa Maria, East of 1655 Foxen Canyon Road
R/T/S	33W/10N/27SW, near middle of the N half of the SW quadrant
Field size	Approximately 8.2 acres
Product applied	Tri-Clor EC Fumigant, 94% Chloropicrin, TriCal Inc.
Type of application	Bed tarpaulin fumigation, <i>drip irrigation</i> , single clear tarp, 1.34 mil thickness, except ends had two layers
Commodity	Soil, strawberry pre-plant
Application rate	200 lbs. Tri-Clor per acre
Grower/ Applicator	DB Specialty Farms, Daren Gee/Eric Torres

Table 2 lists the positions of each sampler and the meteorological trailer.

**TABLE 2 SAMPLER WAYPOINTS**

Sampler ID	Sampler Position Related to Monitored Field	Waypoints
MET (Meteorology Station)	27ft E of W side and 91ft N of S side	N 34 <sup>o</sup> 54.890', W 120 <sup>o</sup> 20.663'
N (North)	60ft N of N side @ midpoint of N side, 458ft	N 34 <sup>o</sup> 54.944', W 120 <sup>o</sup> 20.566'
NE (Northeast)	60ft E of NE corner parallel with N side	N 34 <sup>o</sup> 54.934', W 120 <sup>o</sup> 20.462'
E (East)	60ft E of E side @ midpoint of E side, 195ft	N 34 <sup>o</sup> 54.901', W 120 <sup>o</sup> 20.459'
SE (Southeast)	60ft E of SE corner parallel with S side	N 34 <sup>o</sup> 54.868', W 120 <sup>o</sup> 20.462'
S (South)	60ft S of S side @ midpoint of S side, 460ft	N 34 <sup>o</sup> 54.870', W 120 <sup>o</sup> 20.564'
SW (Southwest)	60ft W of SW corner parallel with S side	N 34 <sup>o</sup> 54.871', W 120 <sup>o</sup> 20.673'
W (West)	60ft W of W side @ midpoint of W side, 194ft	N 34 <sup>o</sup> 54.903', W 120 <sup>o</sup> 20.672'
NW (Northwest)	60ft W of NW corner parallel with N side	N 34 <sup>o</sup> 54.940', W 120 <sup>o</sup> 20.673'

Table 3 below lists the application sampling periods. The day time and night time background collection runs were performed prior to the start of the Chloropicrin application *for a total of 22.3 hours. The application started at 9:20 AM on October 19, 2005 and was completed by 1:30 PM.*

**TABLE 3 APPLICATION SAMPLING PERIODS**

Sampling Period	Sampling Duration (Hours)	Date (October 2005)	Time Start/Stop
Background 1 (Day time)	9.52	18	0800 to 1730
Background 2 (Night time)	14.10	18 - 19	1650 to 0655
1 (Application)	9.20	19	0815 to 1725
2 (Night time)	14.47	19 - 20	1630 to 0700
3 (Day time)	10.78	20	0620 to 1705
4 (Night time)	14.63	20 - 21	1625 to 0700
5 (Day time)	10.63	21	0615 to 1655
6 (Night time)	14.78	21 - 22	1615 to 0700

Note: Time (Start/Stop) overlaps are due to staff access time to equipment around the application site of 22 to 60 minutes.

#### **IV ANALYTICAL METHODOLOGY**

The NLB SAS completed the analytical procedures outlined in the protocol. A gas chromatograph with a mass selective detector operated in the selected ion-monitoring mode was used to analyze the XAD-4 cartridge extracts. The method detection limit (MDL) and estimated quantitation limit (EQL) for Chloropicrin was previously determined as 3.96 ng/sample and 19.8 ng/sample, respectively. The average laboratory spike recovery was 99%, the average field spike recovery was 95% and average trip spike was 101%. In addition, the back sections of the XAD resin cartridges from the six highest samples were analyzed and reported as non-detect, demonstrating no sample breakthrough. Similarly, all trip blanks were listed as non-detect. The quality control results are summarized in Table 5 and listed in the attached document "Trichloronitromethane (Chloropicrin) Analytical Results for Agricultural Application Air Monitoring Samples," dated December 28, 2005 (Appendix B).

#### **V RESULTS**

Sample data capture was 100%. Five minute averaged meteorological data was recorded for the period starting October 17, 2005 at 14:35 through October 22, 2005 at 7:20. This meteorological data is located in Appendix C. Wind Roses for each sample collection period are located in Figures 6 through 13. North reference is true using a declination of 14.5° East. Calibrations and audits were performed on all meteorological sensors at the SPM section's work shop prior to and after the application project. Calibration and audit information is located in Appendix D. Table 4 below is a summary of the analytical data retrieved from the field log sheets and the laboratory's report. All sixty two non-QC samples exceeded DPR's target Estimated Quantitation Limit (EQL) of 0.2 ug/m<sup>3</sup> for an average twelve hour period.

The laboratory diluted thirty four samples because their initial results exceeded the analytical linear range. The reported Chloropicrin sample concentrations range from 0.3 to 415 ug/m<sup>3</sup>. The highest four concentrations all occurred during the 9.2 hour application sampling period. These four samples were at the downwind SE, E and S sites correlating well with wind directions monitored at the field site.

**TABLE 4 CHLOROPICRIN APPLICATION MONITORING RESULTS**

Log #	Sample Name	Date & Time		Time (Hours)	Avg Flow (ccm)	Volume (m3)	Chloropicrin	
		Start	End				(ug/sample)	(ug/m3)
1	SW-C-B-S	10/18/05 8:01	10/18/05 16:39	8.6	96.8	0.04995	1.57E-01	3.14E+00
2	SW-C-B-FS	10/18/05 8:07	10/18/05 16:44	8.6	91.8	0.04737	4.37E-01	9.23E+00
3	NW-C-B-S	10/18/05 8:13	10/18/05 17:04	8.9	99.3	0.05303	9.26E-02	1.75E+00
4	NW-C-B-FS	10/18/05 8:14	10/18/05 17:07	8.9	95.8	0.05116	3.86E-01	7.55E+00
5	NE-C-B-S	10/18/05 8:23	10/18/05 17:20	9.0	96.8	0.05227	2.60E-01	4.98E+00
6	NE-C-B-FS	10/18/05 8:26	10/18/05 17:21	8.9	97.3	0.05196	4.99E-01	9.61E+00
7	SE-C-B-S	10/18/05 8:30	10/18/05 17:30	9.0	91.3	0.04930	9.20E-02	1.87E+00
8	SE-C-B-FS	10/18/05 8:31	10/18/05 17:32	9.0	96.3	0.05200	3.82E-01	7.35E+00
9	SW-C-B1-S	10/18/05 16:49	10/19/05 6:31	13.7	96.3	0.07916	8.73E-02	1.10E+00
10	SW-C-B1-FS	10/18/05 16:52	10/19/05 6:33	13.7	102.9	0.08458	3.89E-01	4.60E+00
11	NW-C-B1-S	10/18/05 17:12	10/19/05 6:41	13.5	99.3	0.08043	8.86E-02	1.10E+00
12	NW-C-B1-FS	10/18/05 17:13	10/19/05 6:42	13.5	103.4	0.08375	3.74E-01	4.46E+00
13	NE-C-B1-S	10/18/05 17:24	10/19/05 6:48	13.4	104.9	0.08434	3.62E-01	4.29E+00
14	NE-C-B1-FS	10/18/05 17:26	10/19/05 6:49	13.4	103.4	0.08313	6.49E-01	7.80E+00
15	SE-C-B1-S	10/18/05 17:34	10/19/05 6:54	13.3	102.4	0.08172	4.12E-01	5.04E+00
16	SE-C-B1-FS	10/18/05 17:38	10/19/05 6:55	13.3	103.9	0.08291	7.08E-01	8.54E+00
17	SW-C-1	10/19/05 8:14	10/19/05 16:26	8.2	99.8	0.04910	4.65E-02	9.46E-01
18	W-C-1	10/19/05 8:18	10/19/05 16:35	8.3	98.3	0.04895	1.79E-02	3.65E-01
19	NW-C-1	10/19/05 8:21	10/19/05 16:42	8.3	98.8	0.04920	2.01E-02	4.08E-01
20	N-C-1	10/19/05 8:27	10/19/05 16:54	8.4	99.3	0.05005	2.52E-01	5.03E+00
21	NE-C-1	10/19/05 8:32	10/19/05 17:01	8.5	99.3	0.05064	1.32E+00	2.60E+01
22	E-C-1	10/19/05 8:37	10/19/05 17:06	8.5	100.3	0.05115	1.54E+01	3.02E+02
23	SE-C-1-S	10/19/05 8:43	10/19/05 17:15	8.6	98.8	0.05098	2.05E+01	4.01E+02
24	SE-C-1-C	10/19/05 8:51	10/19/05 17:17	8.4	99.3	0.05005	2.08E+01	4.15E+02
25	S-C-1-S	10/19/05 8:56	10/19/05 17:26	8.5	98.8	0.05039	9.49E+00	1.88E+02
26	SW-C-2-S	10/19/05 16:30	10/20/05 6:19	13.8	98.8	0.08181	5.25E-01	6.41E+00
27	W-C-2-S	10/19/05 16:38	10/20/05 6:23	13.7	100.9	0.08294	1.92E+00	2.32E+01
28	NW-C-2-S	10/19/05 16:44	10/20/05 6:29	13.8	99.8	0.08263	2.74E+00	3.32E+01
29	N-C-2-S	10/19/05 16:56	10/20/05 6:35	13.7	99.3	0.08162	5.65E+00	6.93E+01
30	NE-C-2-S	10/19/05 17:02	10/20/05 6:40	13.6	102.4	0.08356	1.28E+00	1.53E+01
31	E-C-2-S	10/19/05 17:08	10/20/05 6:44	13.6	98.8	0.08062	7.44E+00	9.23E+01
32	SE-C-2-S	10/19/05 17:16	10/20/05 6:50	13.5	100.3	0.08124	8.14E+00	1.00E+02
33	SE-C-2-C	10/19/05 17:18	10/20/05 6:52	13.6	100.9	0.08233	7.33E+00	8.90E+01
34	S-C-2-S	10/19/05 17:27	10/20/05 6:58	13.5	98.8	0.08003	4.94E+00	6.17E+01
35	SW-C-3-S	10/20/05 6:20	10/20/05 16:23	10.0	99.3	0.05958	8.55E-01	1.43E+01
36	W-C-3-S	10/20/05 6:25	10/20/05 16:27	10.1	96.8	0.05866	1.22E+00	2.08E+01
37	NW-3-C-S	10/20/05 6:31	10/20/05 16:34	10.0	96.8	0.05808	8.77E-01	1.51E+01
38	N-C-3-S	10/20/05 6:36	10/20/05 16:40	10.0	98.3	0.05898	7.78E-01	1.32E+01
39	NE-C-3-S	10/20/05 6:41	10/20/05 16:46	10.1	98.3	0.05957	8.04E-01	1.35E+01
40	E-C-3-S	10/20/05 6:45	10/20/05 16:50	10.0	96.8	0.05808	5.54E+00	9.54E+01
41	SE-C-3-S	10/20/05 6:51	10/20/05 16:57	10.1	98.8	0.05987	5.60E+00	9.35E+01
42	SE-3-C-C	10/20/05 6:54	10/20/05 17:00	10.1	97.8	0.05927	5.22E+00	8.81E+01
43	S-C-3-S	10/20/05 7:00	10/20/05 17:07	10.1	97.3	0.05896	3.81E+00	6.45E+01
44	SW-C-4-S	10/20/05 16:24	10/21/05 6:16	13.9	102.9	0.08582	2.45E-01	2.86E+00
45	W-C-4-S	10/20/05 16:29	10/21/05 6:21	13.8	102.9	0.08520	1.88E+00	2.21E+01
46	NW-C-4-S	10/20/05 16:36	10/21/05 6:29	13.9	97.3	0.08115	3.05E+00	3.76E+01
47	N-C-4-S	10/20/05 16:42	10/21/05 6:36	13.9	100.9	0.08415	5.16E+00	6.13E+01
48	NE-C-4-S	10/20/05 16:48	10/21/05 6:43	13.9	100.9	0.08415	9.71E-01	1.15E+01
49	E-C-4-S	10/20/05 16:52	10/21/05 6:47	13.9	100.9	0.08415	1.97E+00	2.34E+01
50	SE-C-4-S	10/20/05 16:58	10/21/05 6:53	13.9	100.9	0.08415	1.05E+00	1.25E+01
51	SE-C-4-C	10/20/05 17:01	10/21/05 6:56	13.9	99.8	0.08323	9.58E-01	1.15E+01
52	S-C-4-S	10/20/05 17:08	10/21/05 7:02	13.8	97.3	0.08056	6.61E-01	8.20E+00

53	SW-C-5-S	10/21/05 6:17	10/21/05 16:14	9.9	98.8	0.05869	1.01E-01	1.72E+00
54	W-C-5-S	10/21/05 6:23	10/21/05 16:18	9.9	97.3	0.05780	5.35E-01	9.26E+00
55	NW-C-5-S	10/21/05 6:30	10/21/05 16:25	9.9	95.8	0.05691	7.66E-01	1.35E+01
56	N-C-5-S	10/21/05 6:37	10/21/05 16:30	9.9	97.3	0.05780	4.93E-01	8.53E+00
57	NE-C-5-S	10/21/05 6:44	10/21/05 16:36	9.8	99.3	0.05839	1.76E-01	3.01E+00
58	E-C-5-S	10/21/05 6:49	10/21/05 16:40	9.9	97.8	0.05809	4.31E+00	7.42E+01
59	SE-C-5-S	10/21/05 6:54	10/21/05 16:45	9.9	97.8	0.05809	5.78E+00	9.94E+01
60	SE-C-5-C	10/21/05 6:57	10/21/05 16:49	9.8	97.3	0.05721	5.94E+00	1.04E+02
61	S-C-5-S	10/21/05 7:03	10/21/05 16:55	9.9	98.3	0.05839	2.75E+00	4.71E+01
62	SW-C-6-S	10/21/05 16:15	10/22/05 6:40	14.4	100.9	0.08718	2.21E-01	2.53E+00
63	W-C-6-S	10/21/05 16:20	10/22/05 6:43	14.4	100.9	0.08718	3.25E-01	3.73E+00
64	NW-C-6-S	10/21/05 16:25	10/22/05 6:46	14.3	99.8	0.08563	3.42E-01	3.99E+00
65	N-C-6-S	10/21/05 16:32	10/22/05 6:49	14.3	102.4	0.08786	1.36E+00	1.55E+01
66	NE-C-6-S	10/21/05 16:37	10/22/05 6:52	14.3	100.9	0.08657	1.08E+00	1.25E+01
67	E-C-6-S	10/21/05 16:41	10/22/05 6:55	14.2	103.4	0.08810	1.94E+00	2.20E+01
68	SE-C-6-S	10/21/05 16:47	10/22/05 6:57	14.2	103.4	0.08810	1.45E+00	1.64E+01
69	SE-C-6-C	10/21/05 16:51	10/22/05 6:59	14.2	102.9	0.08767	1.33E+00	1.52E+01
70	S-C-6-S	10/21/05 16:56	10/22/05 7:02	14.1	93.8	0.07935	8.44E-01	1.06E+01

Notes: **C** = Collocated at SE site

Typical Nomenclature:

SE-C-1-S = **S**outh **E**ast – **C**hloropicrin – **1<sup>st</sup>** run – **S**ample

SW-C-B-S = **S**outh **W**est – **C**hloropicrin – **B**ackground - **S**ample

<b>TABLE 5</b>					
<b>CHLOROPICRIN QUALITY CONTROL SAMPLE RESULTS</b>					
<b>Log #</b>	<b>Sample Name</b>	<b>Date &amp; Time Collected</b>	<b>Percent Recovery</b>	<b>Chloropicrin</b>	
				<b>(ug/sample)</b>	<b>(ug/m3)</b>
2	SW-C-B-FS	10/18/05 16:44	93.48%	4.37E-01	9.23E+00
4	NW-C-B-FS	10/18/05 17:07	97.83%	3.86E-01	7.55E+00
6	NE-C-B-FS	10/18/05 17:21	79.65%	4.99E-01	9.61E+00
8	SE-C-B-FS	10/18/05 17:32	96.75%	3.82E-01	7.35E+00
10	SW-C-B1-FS	10/19/05 6:33	100.65%	3.89E-01	4.60E+00
12	NW-C-B1-FS	10/19/05 6:42	94.98%	3.74E-01	4.46E+00
14	NE-C-B1-FS	10/19/05 6:49	95.57%	6.49E-01	7.80E+00
16	SE-C-B1-FS	10/19/05 6:55	98.88%	7.08E-01	8.54E+00
71	C-TS1	10/22/05 8:00	98.42%	2.95E-01	N.A.
72	C-TS2	10/22/05 8:01	101.21%	3.04E-01	N.A.
73	C-TS3	10/22/05 8:02	103.75%	3.11E-01	N.A.
74	C-TS4	10/22/05 8:03	99.50%	2.99E-01	N.A.
75	C-TB1	10/22/05 8:04	N.A.	ND	<MDL
76	C-TB2	10/22/05 8:05	N.A.	ND	<MDL
77	C-TB3	10/22/05 8:06	N.A.	ND	<MDL
78	C-TB4	10/22/05 8:07	N.A.	ND	<MDL
79	C-LS1	10/26/2005	100.59%	3.02E-01	N.A.
80	C-LS2	10/26/2005	104.82%	3.14E-01	N.A.
81	C-LS3	10/26/2005	96.12%	2.88E-01	N.A.
82	C-LS4	10/26/2005	95.23%	2.86E-01	N.A.

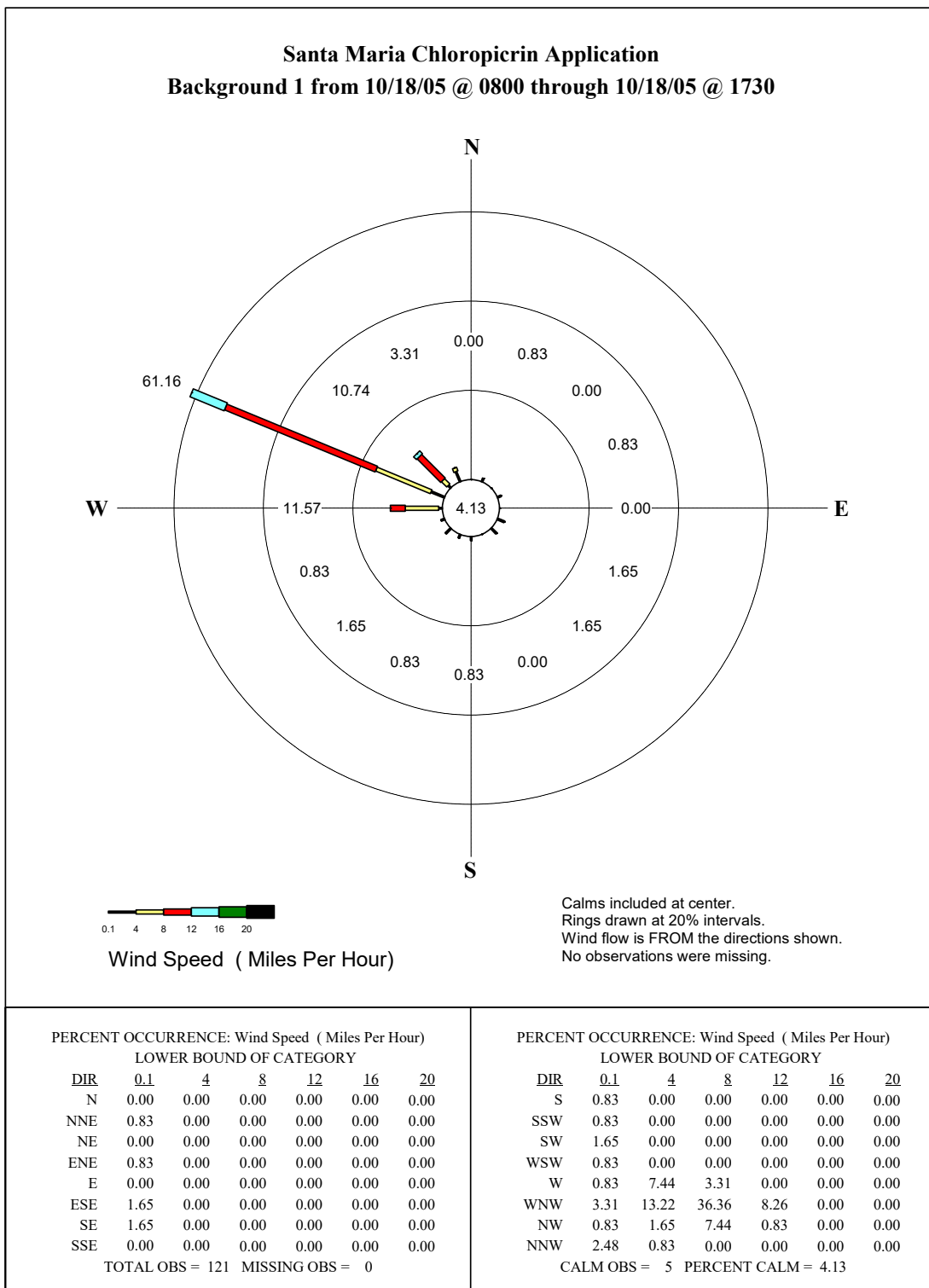
Notes: **FS** = Field Spike (Spiked with 300ng of Chloropicrin)

**TS** = Trip Spike (Spiked with 300ng of Chloropicrin)

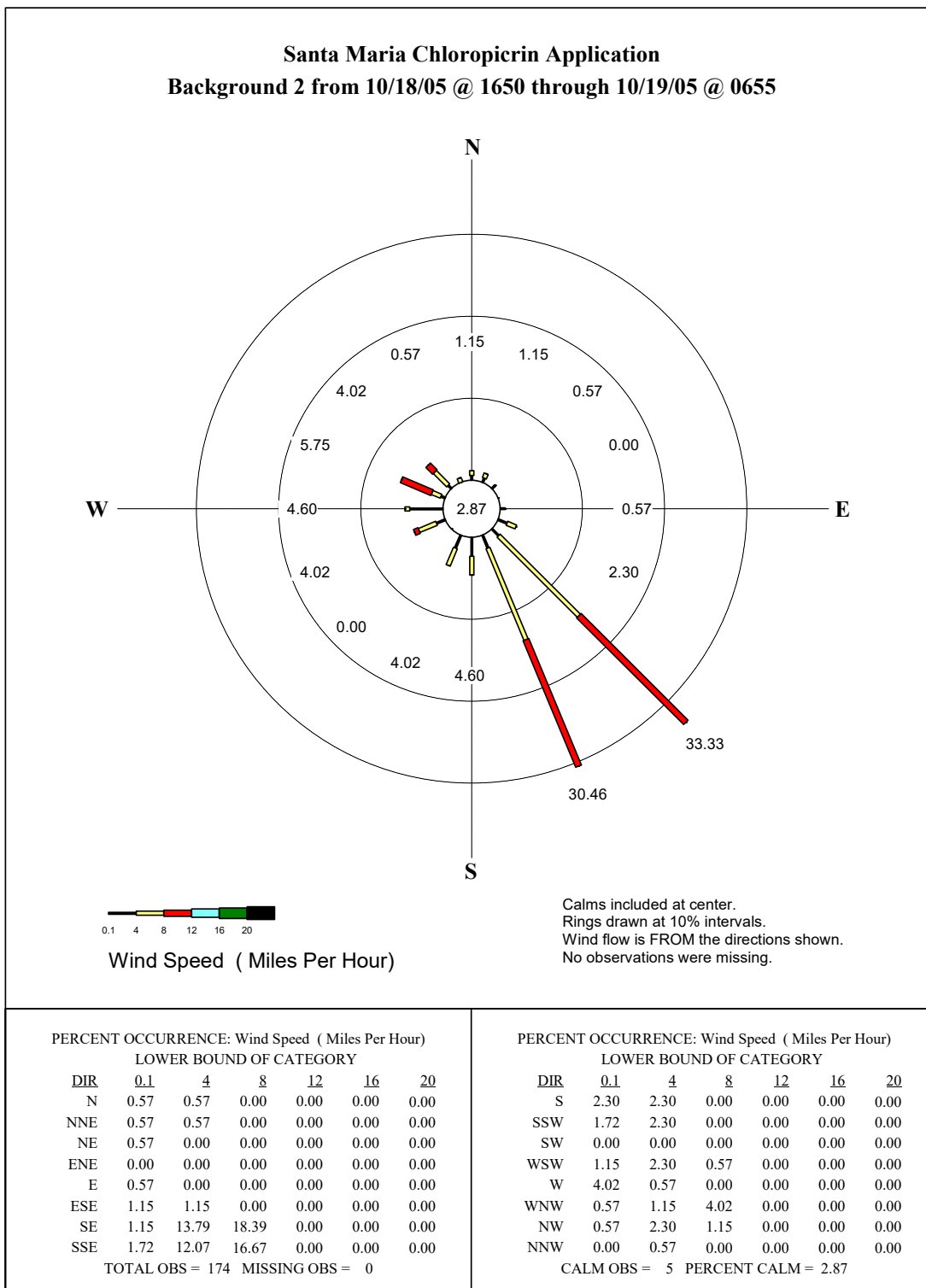
**TB** = Trip Blank

**LS** = Lab Spike (Spiked with 300ng of Chloropicrin)

**FIGURE 6: BACKGROUND 1 WIND ROSE**

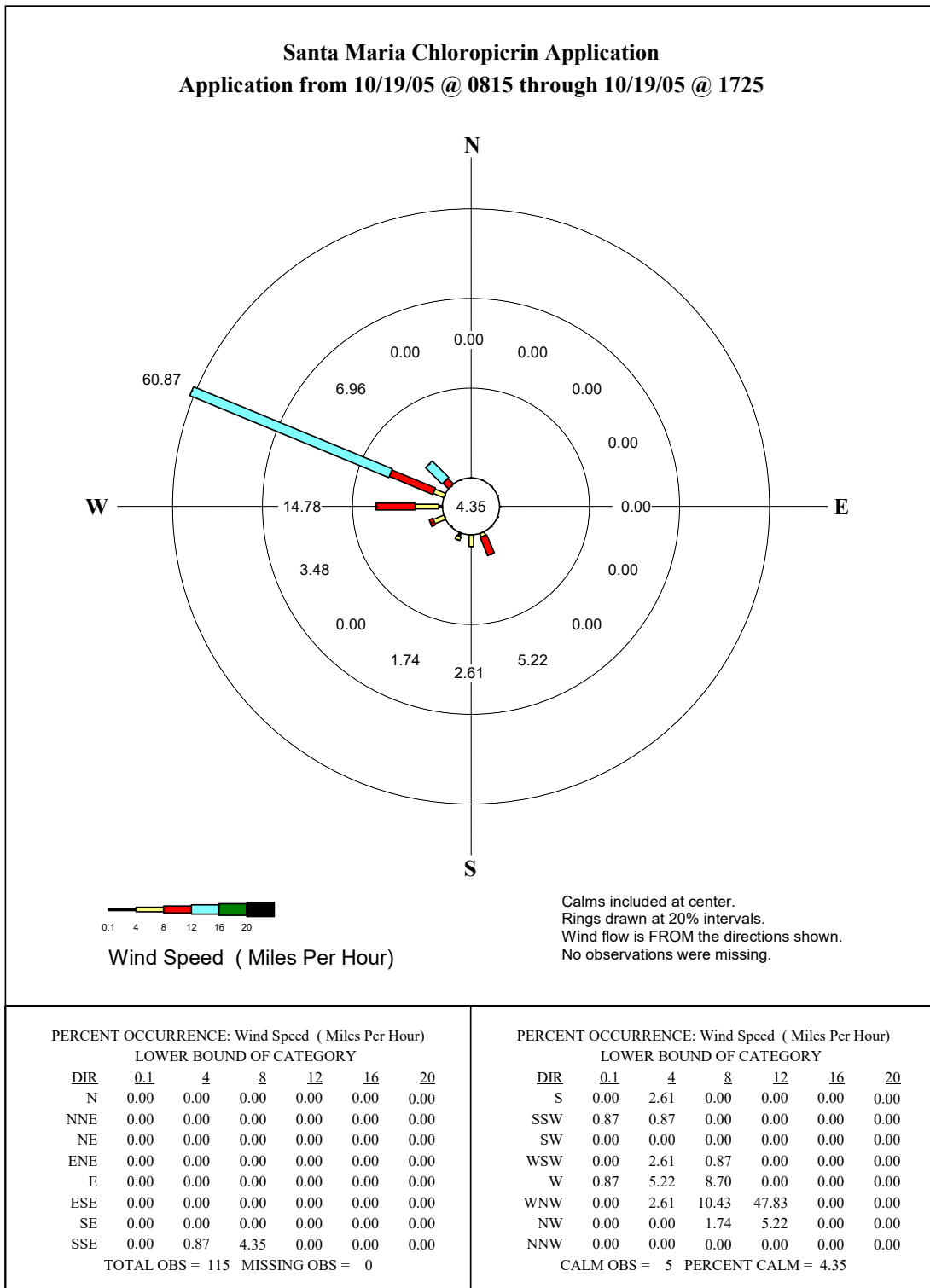


**FIGURE 7: BACKGROUND 2 WIND ROSE**

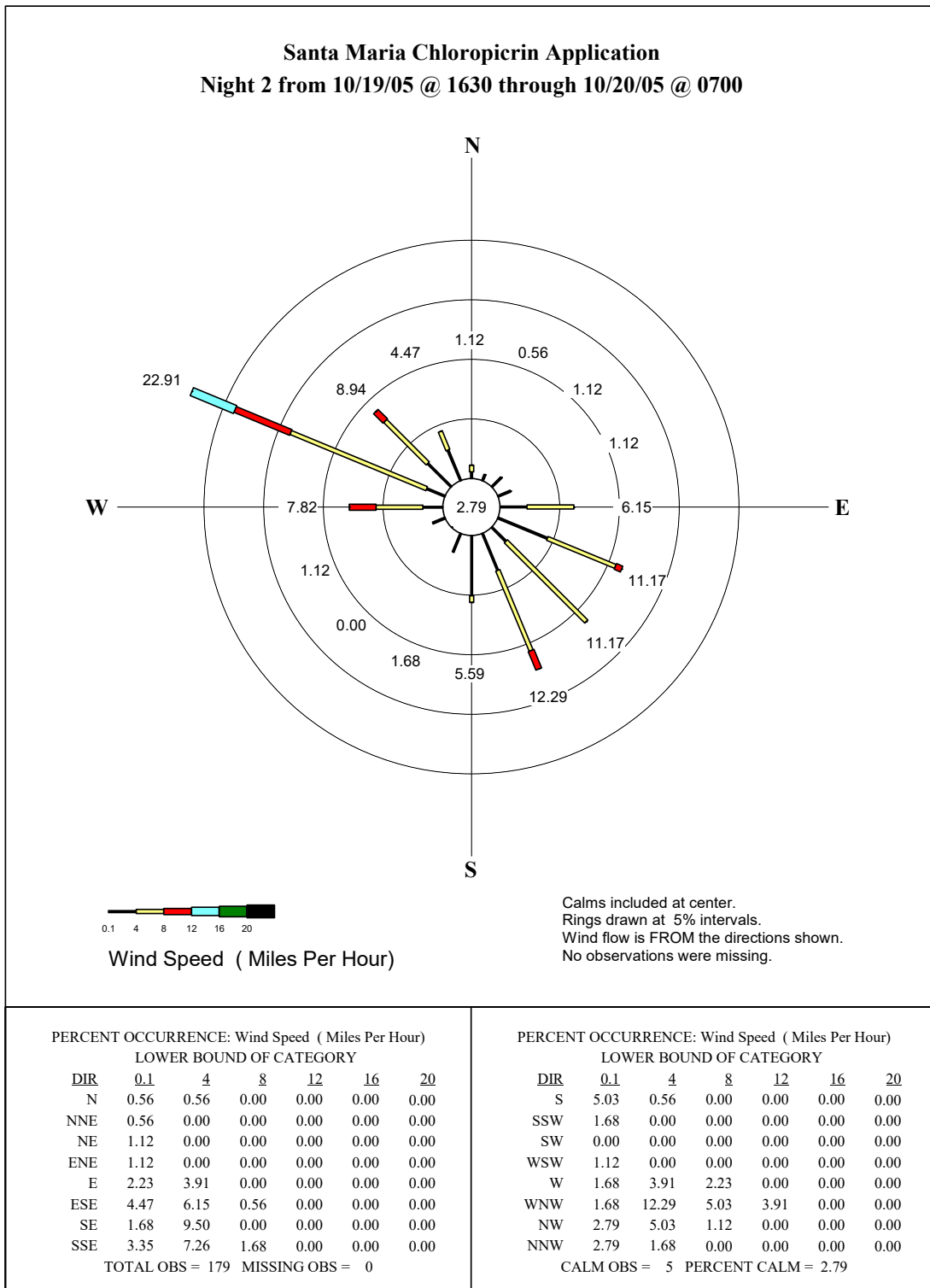




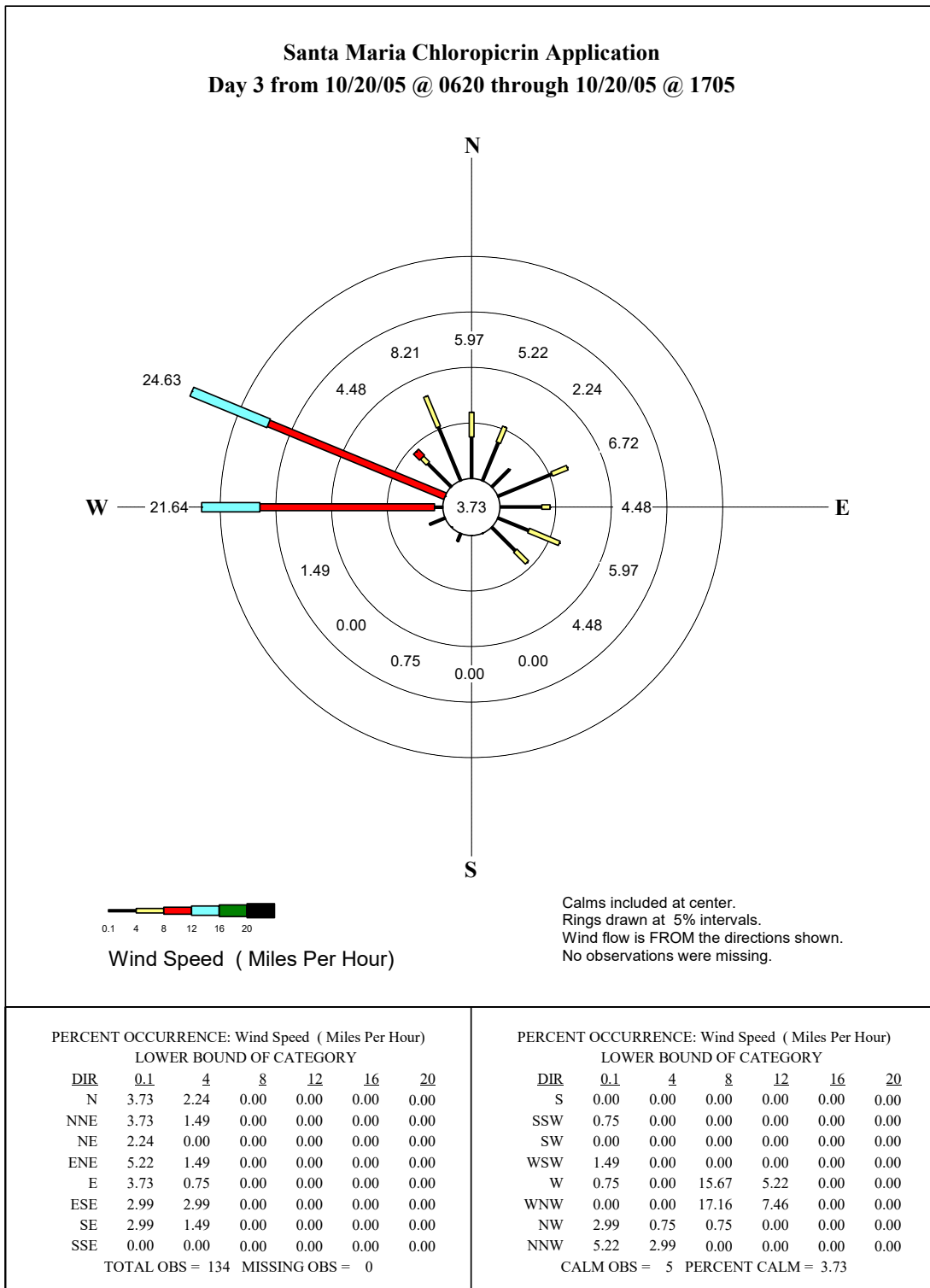
**FIGURE 8: APPLICATION WIND ROSE**



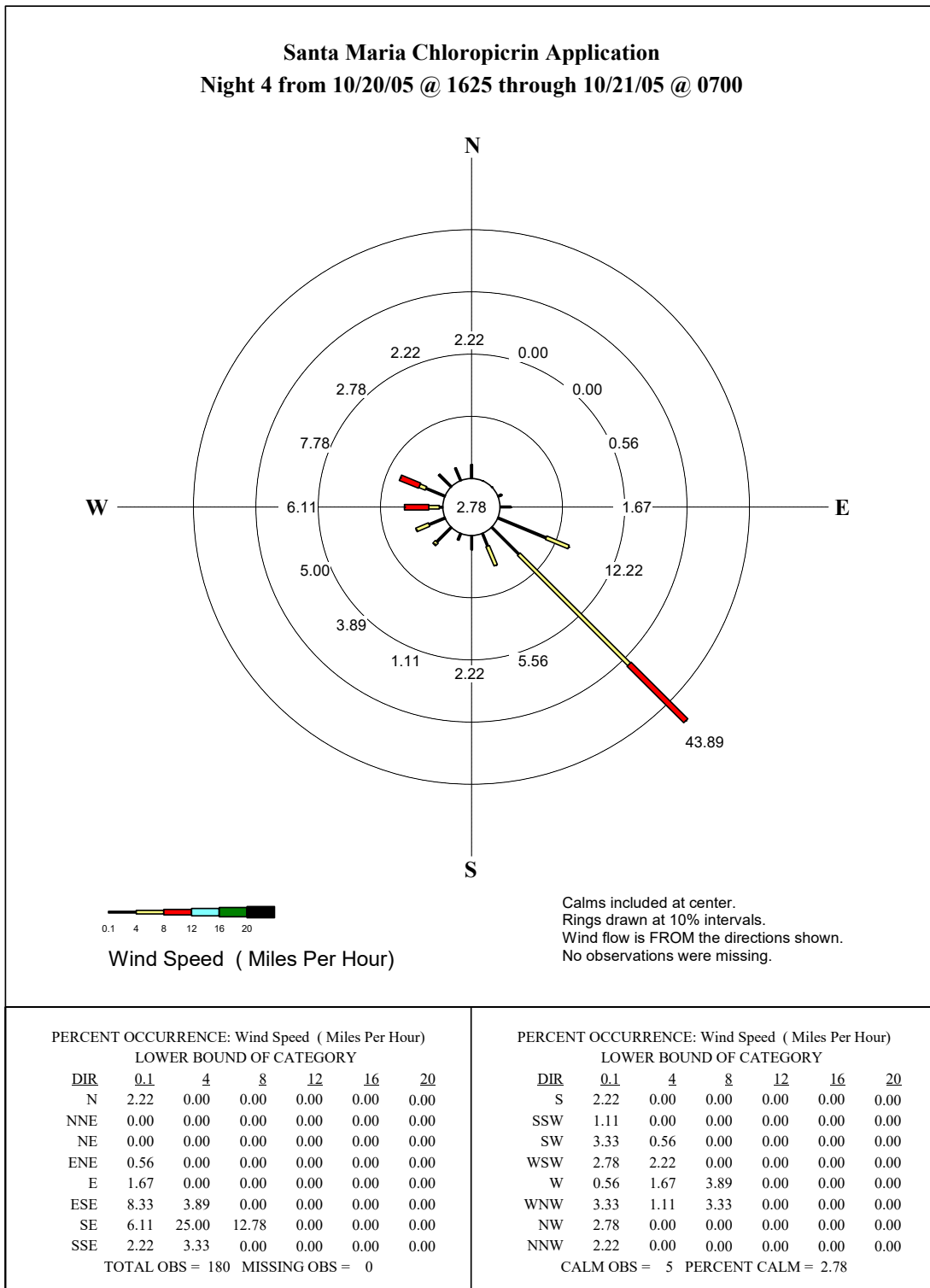
**FIGURE 9: RUN 2 NIGHT WIND ROSE**



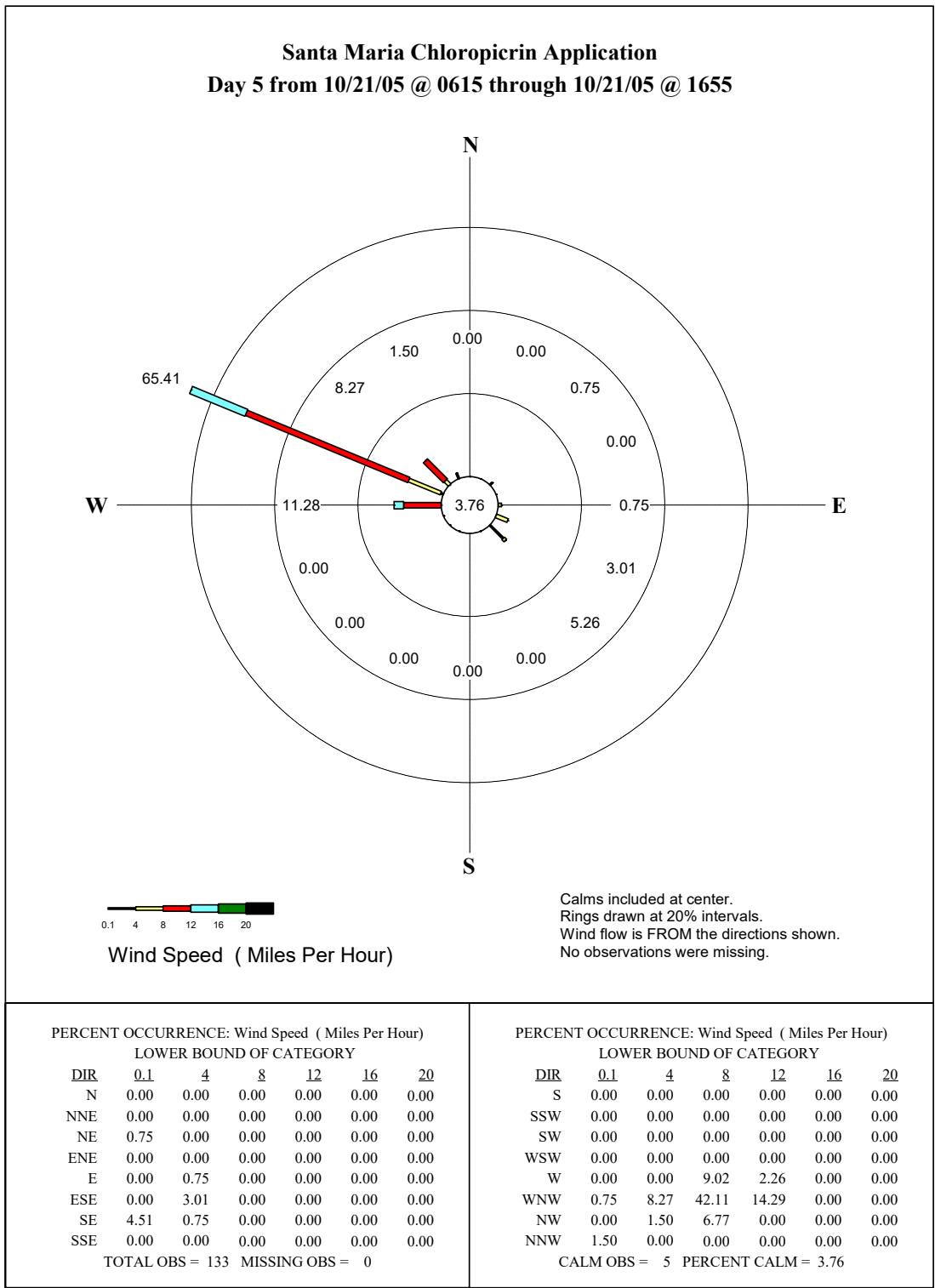
**FIGURE 10: RUN 3 DAY WIND ROSE**



**FIGURE 11: RUN 4 NIGHT WIND ROSE**



**FIGURE 12: RUN 5 DAY WIND ROSE**



**FIGURE 13: RUN 6 NIGHT WIND ROSE**

