

1 2.5.2.2 Temperature Summary

2 Temperatures are moderate throughout the year, although seasonal changes are distinct. The
 3 mean annual temperature in southeastern New Mexico is 63° degrees-Fahrenheit (17° C). In the
 4 winter (December through February), nighttime lows average near 23° degrees-Fahrenheit (-5°
 5 C), and maxima average in the 50s. The lowest recorded temperature at the nearest Class-A
 6 weather station in Roswell was -29° degrees-Fahrenheit (-34° C) in February 1905. In the
 7 summer (June through August), the daytime temperature exceeds 90°F (32° C) approximately 75
 8 percent of the time. The National Weather Service recently documented 122° degrees-Fahrenheit
 9 (50° C) at the WIPP site as the record high temperature for New Mexico. This temperature was
 10 recorded on June 27, 1994. Table 2-12 shows the annual average, maximum, and minimum
 11 temperatures from 1990 through 1994. ~~Temperature data for 1995 are summarized in~~
 12 ~~Appendix SER.~~

13 **Table 2-12. Annual Average, Maximum, and Minimum Temperatures**

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Year	Annual Average Temperature		Maximum Temperature		Minimum Temperature	
	(°C)	(°F)	(°C)	(°F)	(°C)	(°F)
1990	17.8	64	46.1	115	-13.9	7
1991	17.2	63	42.8	109	-7.8	18
1992	17.2	63	42.8	109	-10	14
1993	17.8	64	42.8	109	-18.9	-2
1994	17.8	64	50	122	-14.4	6
Average	17.6	63.6	44.9	112.8	-13	8.6

Source: WIPP Annual Site Environmental Report for Calendar Years 1990 through 1994.

15 2.5.2.3 Precipitation Summary

16 Precipitation is light and unevenly distributed throughout the year, averaging 28.2 ~~33~~ cm (11.1
 17 ~~13~~-in.) per year for the past five years **from 1995 through 2002**. Winter is the season of least
 18 precipitation, averaging less than 1.5 cm (0.6 in.) of rainfall per month. Snow averages about
 19 13 cm (5 in.) per year at the site and seldom remains on the ground for more than a day.
 20 Approximately half the annual precipitation comes from frequent thunderstorms in June through
 21 September. Rains are usually brief but occasionally intense when moisture from the Gulf of
 22 Mexico spreads over the region. Monthly average, maximum, and minimum precipitations
 23 recorded at the WIPP site from 1990 through 1994 ~~are summarized~~ **2002 are summarized** in
 24 ~~Figure 2-48. 2-41. Precipitation data for 1995 are summarized in Appendix SER.~~

25 2.5.2.4 Wind Speed and Wind Direction Summary

26 The frequencies of wind speeds and directions are depicted by ~~wind roses~~ **wind roses in** in
 27 ~~Figures 2-42 through 2-45~~ **Figures 2-49 through 2-56** for the WIPP site and ~~Figure 2-46 for~~
 28 ~~Carlsbad, New Mexico.~~

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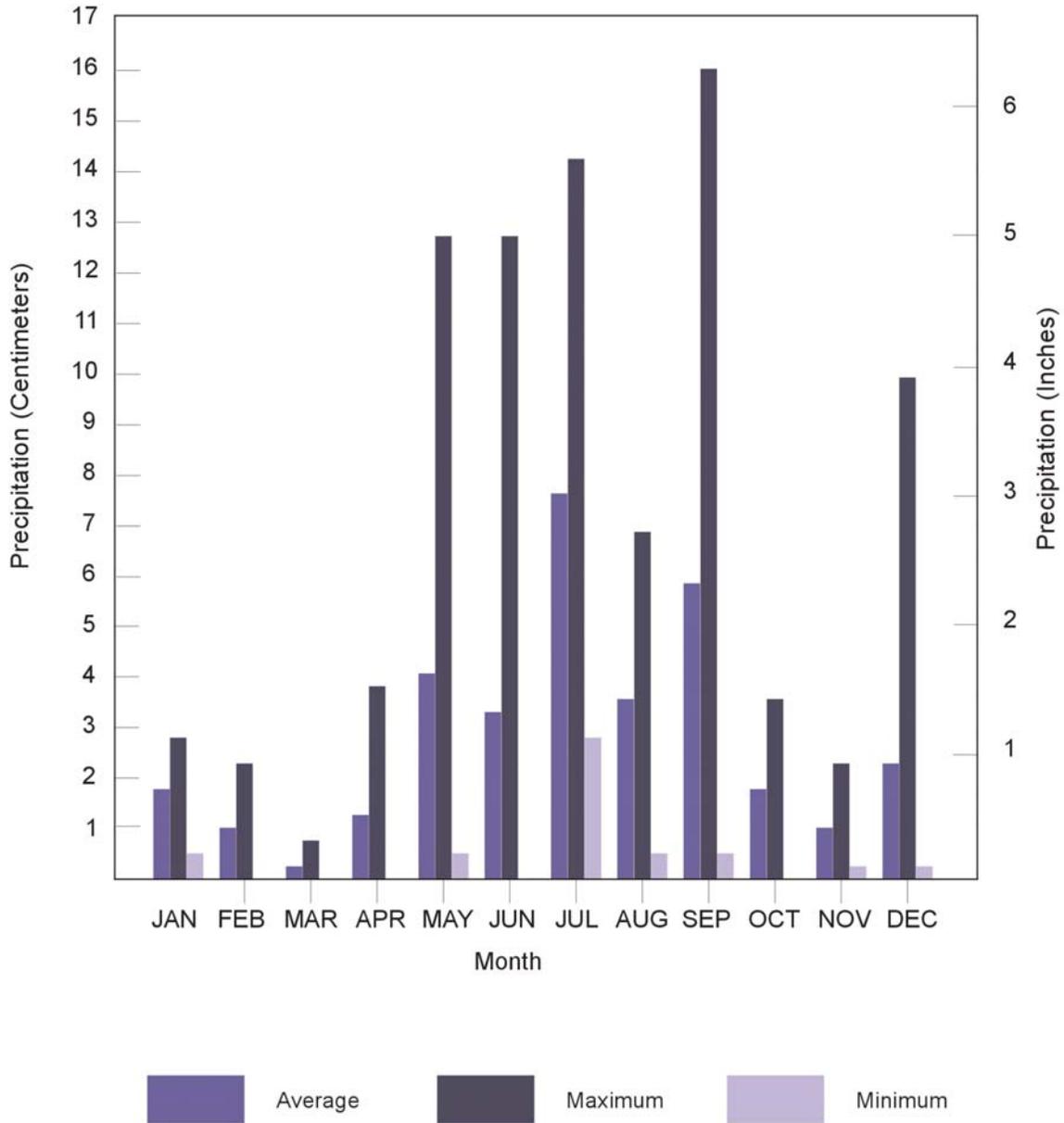
Table 2-14. Annual Average, Maximum, and Minimum Temperatures

<i>Year</i>	<i>Annual Average Temperature</i>		<i>Maximum Temperature</i>		<i>Minimum Temperature</i>	
	<i>(°C)</i>	<i>(°F)</i>	<i>(°C)</i>	<i>(°F)</i>	<i>(°C)</i>	<i>(°F)</i>
<i>1990</i>	<i>17.8</i>	<i>64</i>	<i>46.1</i>	<i>115</i>	<i>-13.9</i>	<i>7</i>
<i>1991</i>	<i>17.2</i>	<i>63</i>	<i>42.8</i>	<i>109</i>	<i>-7.8</i>	<i>18</i>
<i>1992</i>	<i>17.2</i>	<i>63</i>	<i>42.8</i>	<i>109</i>	<i>-10</i>	<i>14</i>
<i>1993</i>	<i>17.8</i>	<i>64</i>	<i>42.8</i>	<i>109</i>	<i>-18.9</i>	<i>-2</i>
<i>1994</i>	<i>17.8</i>	<i>64</i>	<i>50</i>	<i>122</i>	<i>-14.4</i>	<i>6</i>
<i>1995</i>	<i>17</i>	<i>63</i>	<i>42</i>	<i>107</i>	<i>-7</i>	<i>19</i>
<i>1996</i>	<i>17</i>	<i>63</i>	<i>41</i>	<i>106</i>	<i>-7</i>	<i>19</i>
<i>1997</i>	<i>16.3</i>	<i>61.4</i>	<i>38.6</i>	<i>101.5</i>	<i>-11.4</i>	<i>11.4</i>
<i>1998</i>	<i>18.3</i>	<i>64.9</i>	<i>41.6</i>	<i>106.9</i>	<i>-10.8</i>	<i>12.6</i>
<i>1999</i>	<i>18.1</i>	<i>64.6</i>	<i>40.9</i>	<i>105.6</i>	<i>-7.9</i>	<i>17.8</i>
<i>2000</i>	<i>17.4</i>	<i>63.3</i>	<i>40.2</i>	<i>104.4</i>	<i>-6.8</i>	<i>19.7</i>
<i>2001</i>	<i>17.5</i>	<i>63.5</i>	<i>39.5</i>	<i>103.2</i>	<i>-7.8</i>	<i>18.0</i>
<i>2002</i>	<i>17.5</i>	<i>63.5</i>	<i>39.8</i>	<i>103.7</i>	<i>-8.9</i>	<i>16.0</i>
<i>Average</i>	<i>17.5</i>	<i>63.5</i>	<i>42.2</i>	<i>107.9</i>	<i>-0.2</i>	<i>13.9</i>

2 In general, the predominant wind direction in Carlsbad are from the south, southeast, and west.
3 Wind data for 1995 are summarized in Appendix SER.

4 **2.6 Seismology**

5 The DOE used tectonic activity as a siting criterion. The intent was to avoid tectonic conditions
6 such as faulting and igneous activity that would jeopardize waste isolation over the long term
7 and to avoid areas where earthquake size and frequency could impact facility design and
8 operations. The WIPP site met both aspects of this criterion fully. Long-term tectonic activity is
9 discussed in Section 2.1.5. The favorable results of the seismic (earthquake) studies are
10 discussed here. The purpose of the seismic studies is to build a basis from which to predict
11 ground motions that the WIPP repository may be subjected to in the near and distant future. The
12 concern about seismic effects in the near future, during the operational period, pertains mainly to
13 the design requirements for surface and underground structures for providing containment during
14 seismic events. The concern about effects occurring over the long term, after the repository has
15 been decommissioned and sealed, pertains more to relative motions (faulting) within the
16 repository and possible effects of faulting on the integrity of the salt beds and/or shaft seals.
17 **Updated seismic activity information is provided in Figures 2-57 and 2-58.** In this discussion,
18 the magnitudes are reported in terms of the Richter scale, and all intensities are based on the



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Figure 2-41. Monthly Precipitation for the WIPP Site from 1990 through 1994

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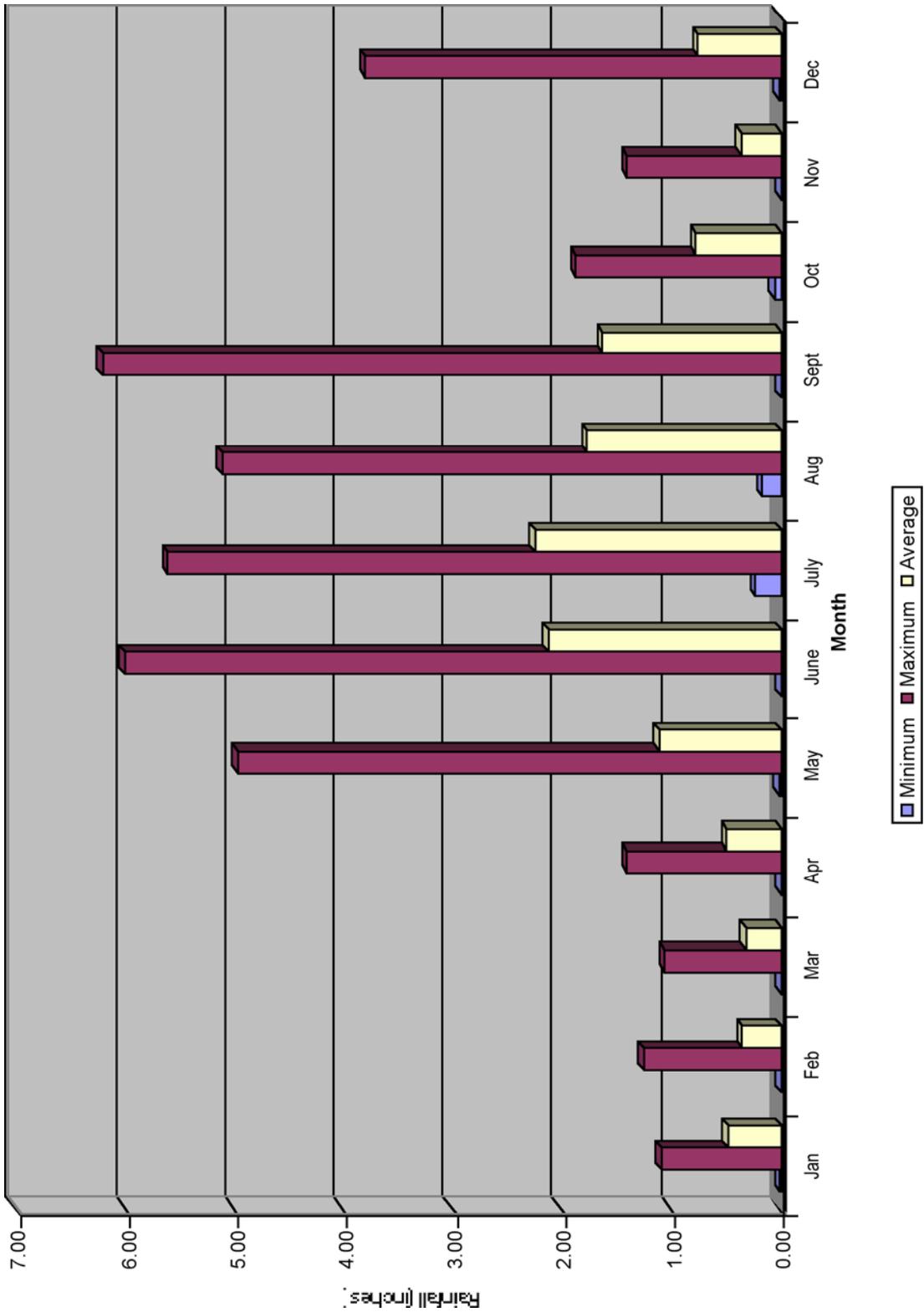
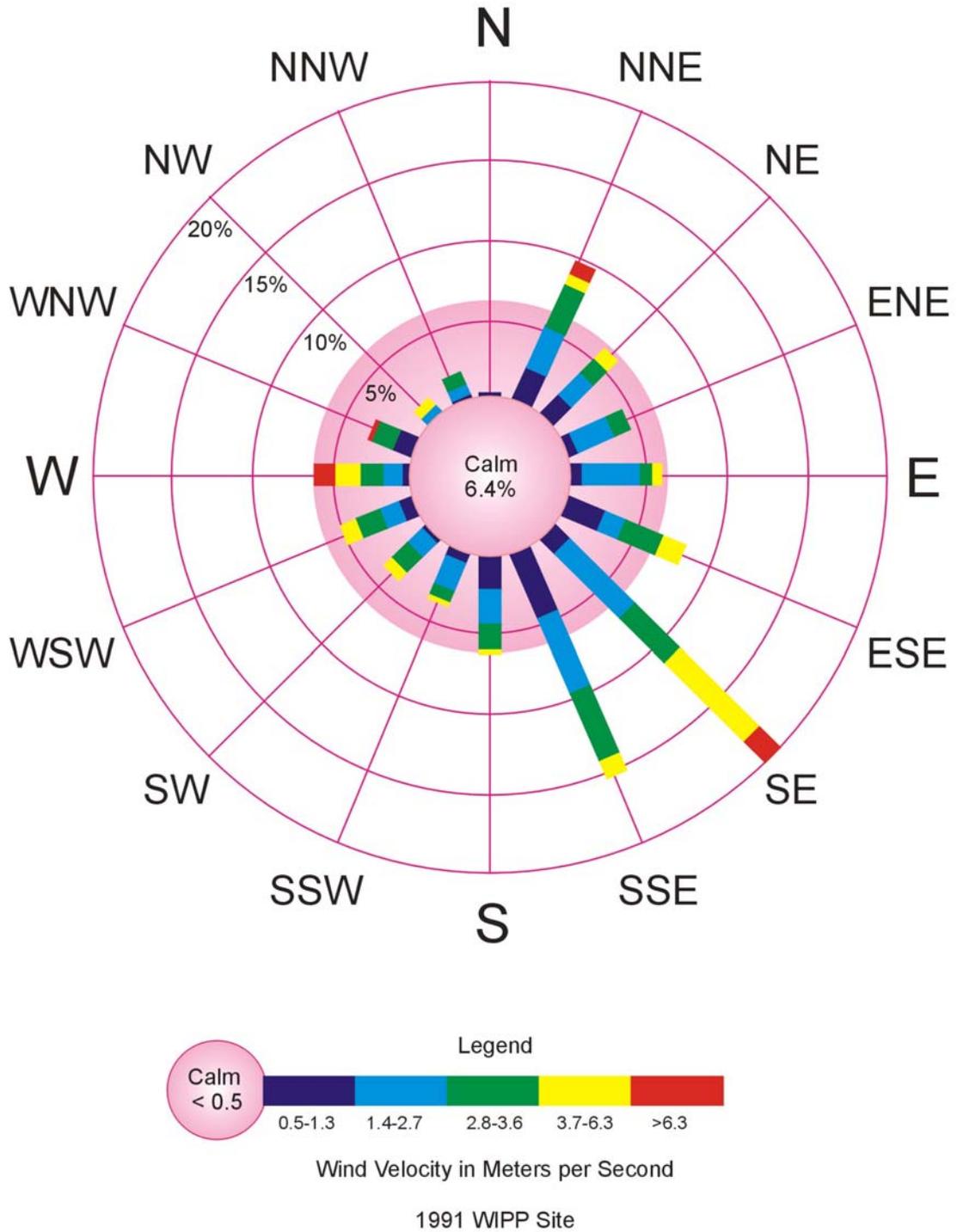


Figure 2-48. Monthly Precipitation for the WIPP Site from 1990-2002.

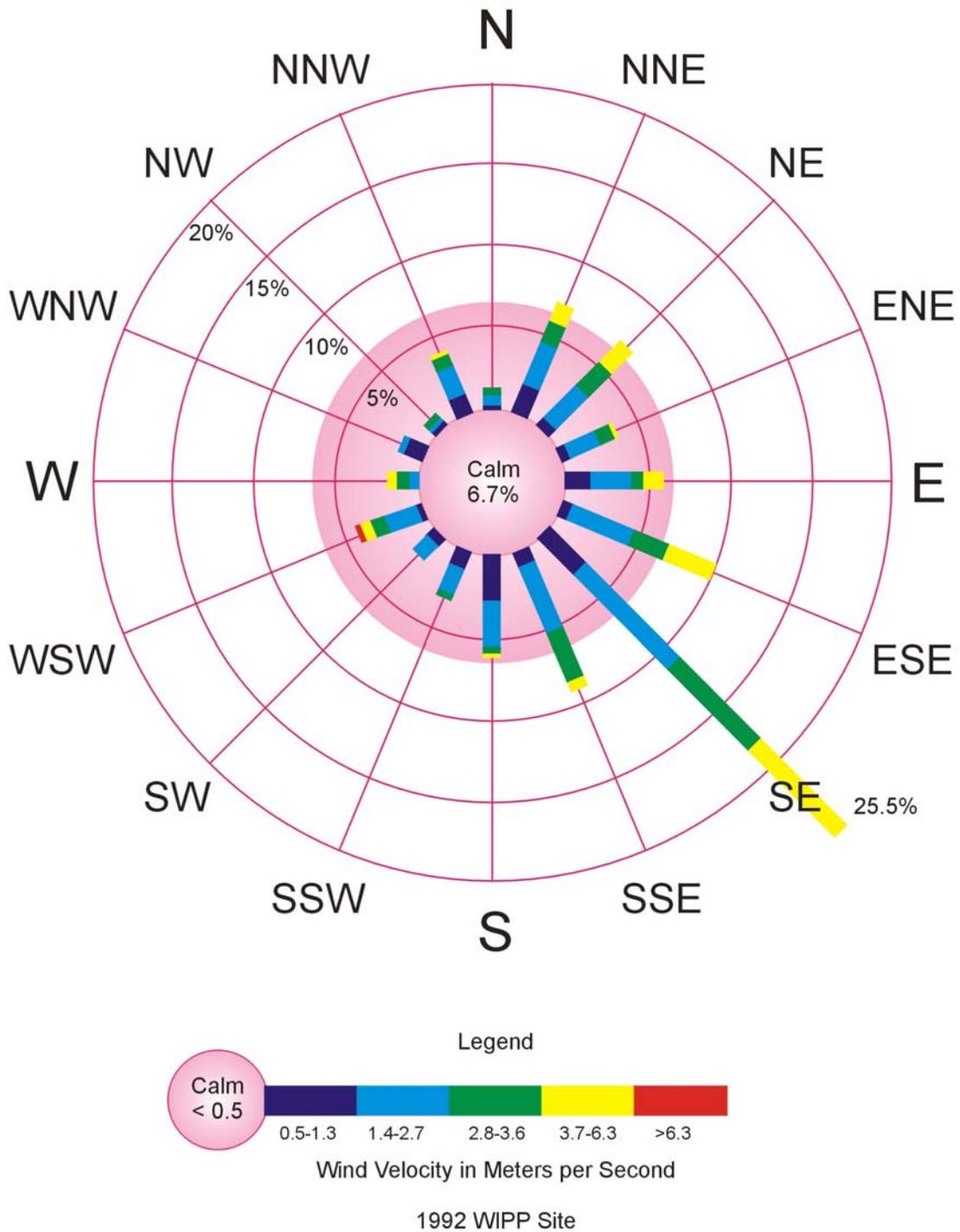
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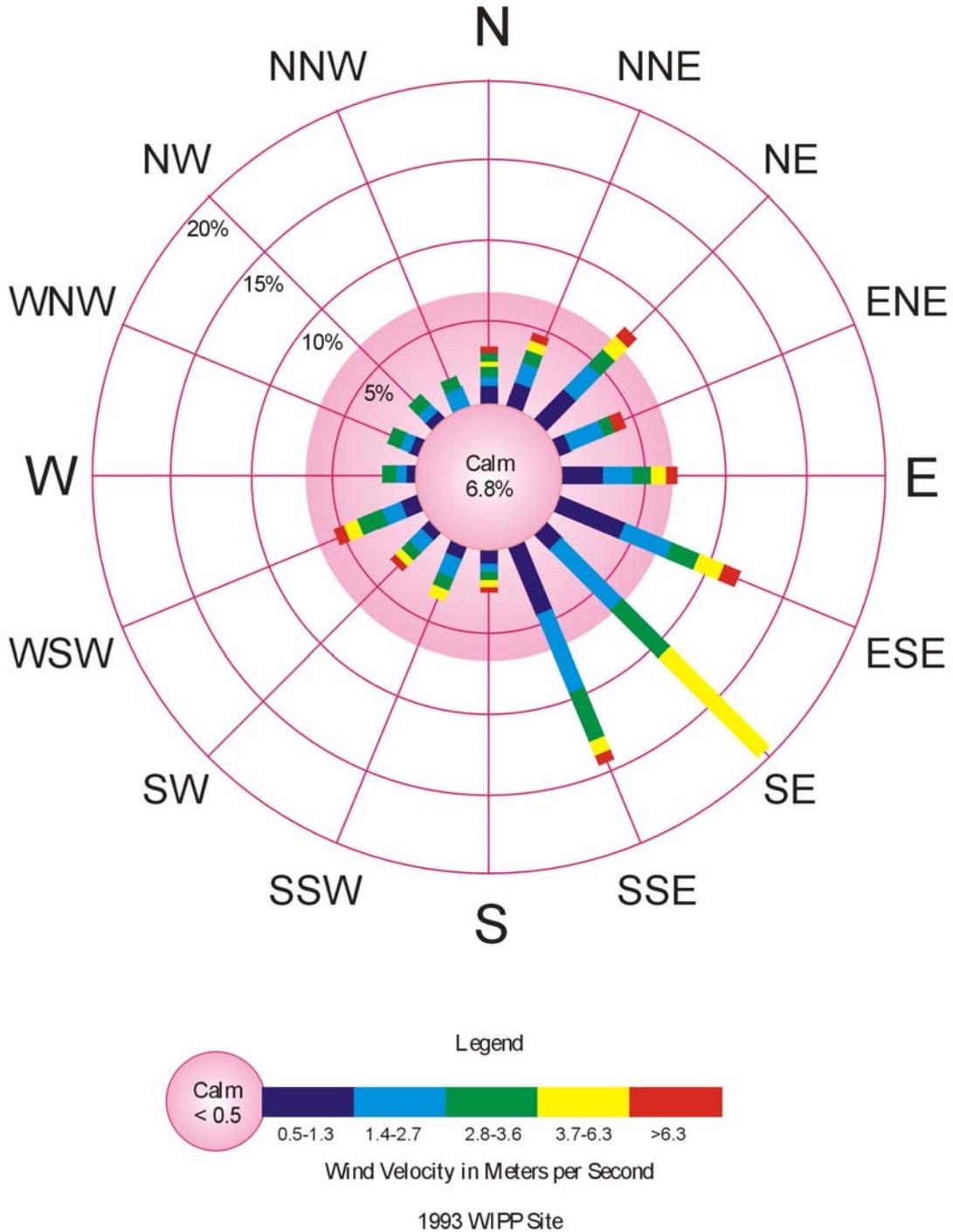
Figure 2-42. 1991 Annual Windrose—WIPP Site



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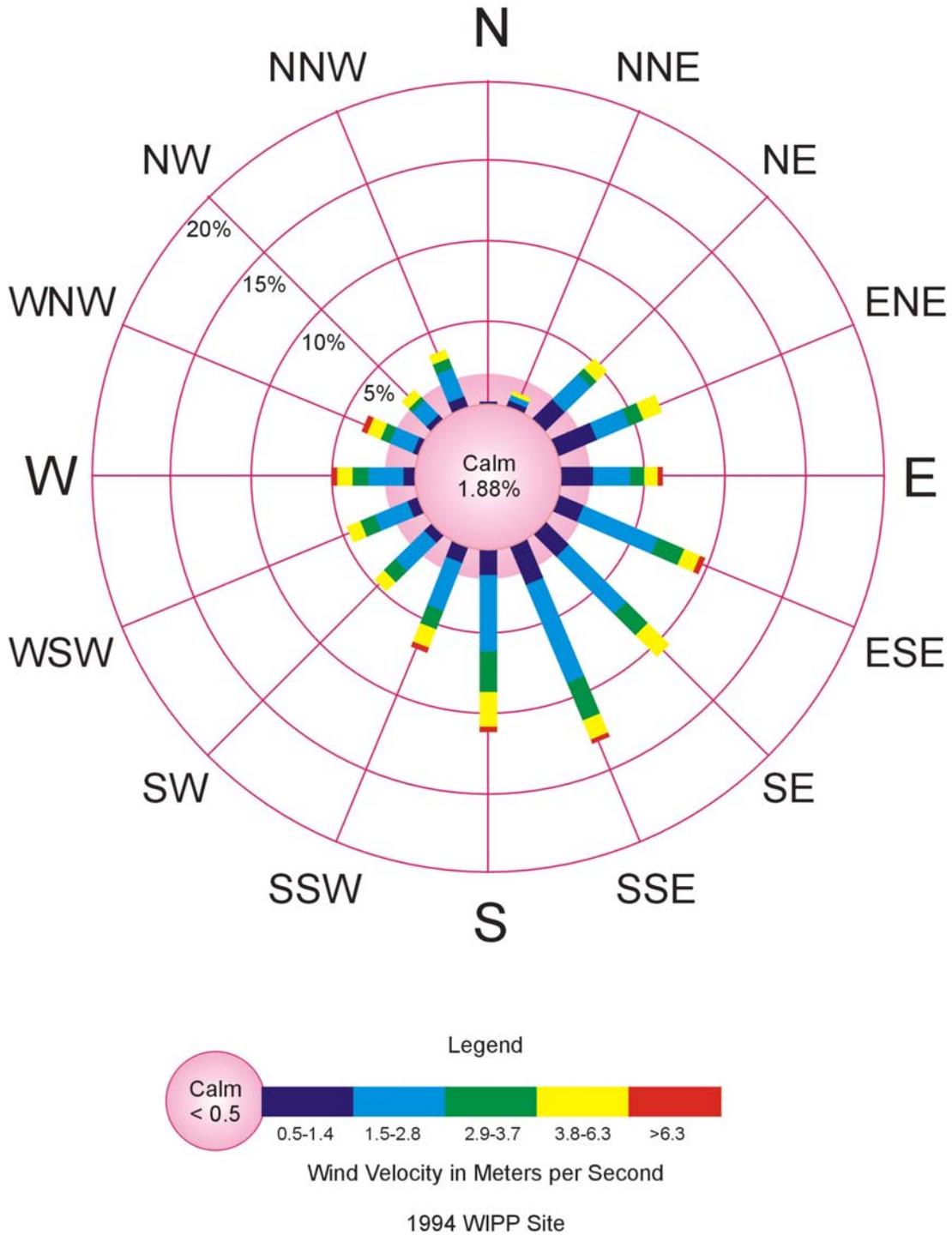
~~Figure 2-43. 1992 Annual Windrose WIPP Site~~



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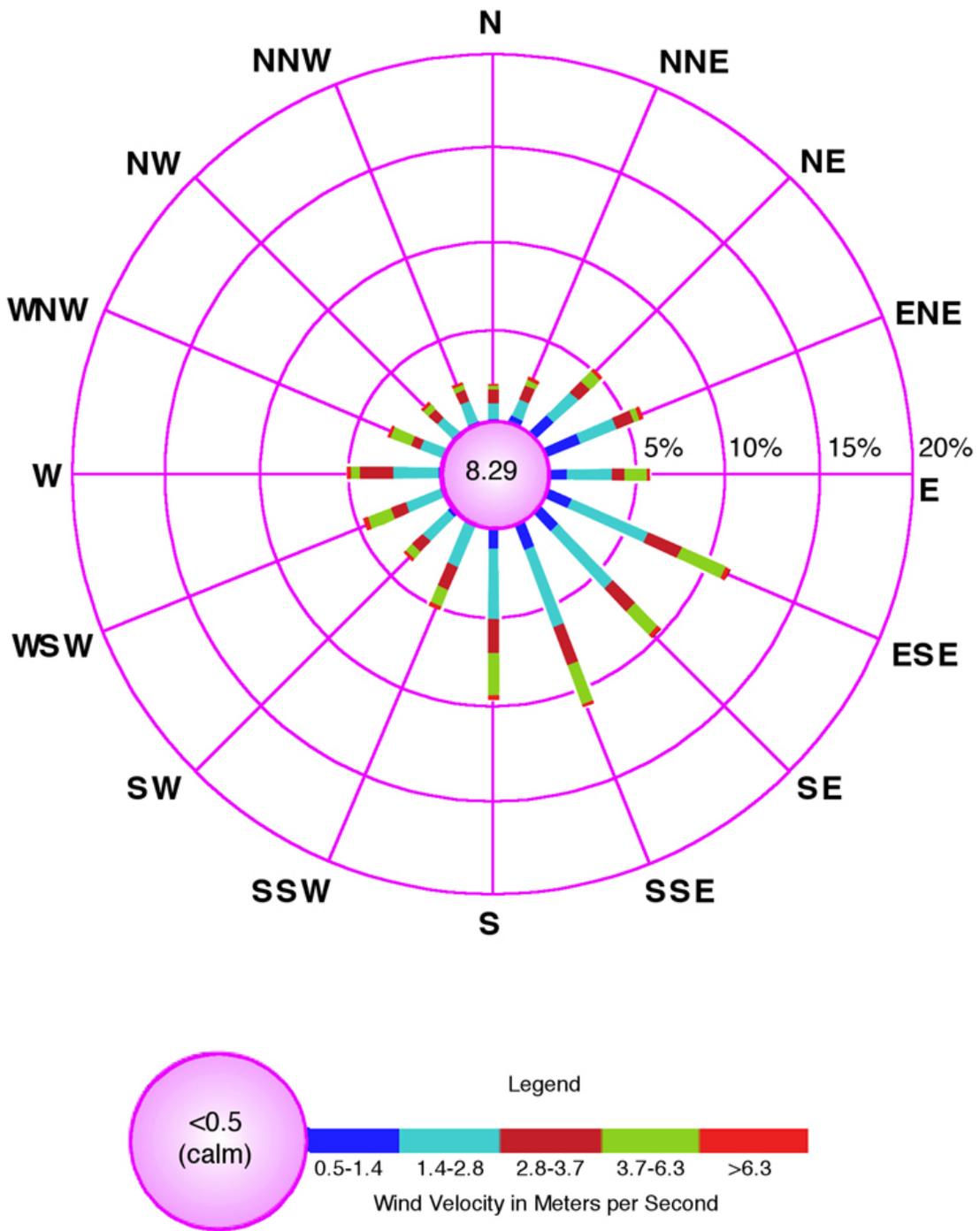
Figure 2-44. 1993 Annual Windrose – WIPP Site



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Figure 2-45. 1994 Annual Windrose—WIPP Site



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Figure 2-49. 1995 Annual Wind Rose at 10-m (33-ft.) Height at WIPP Site

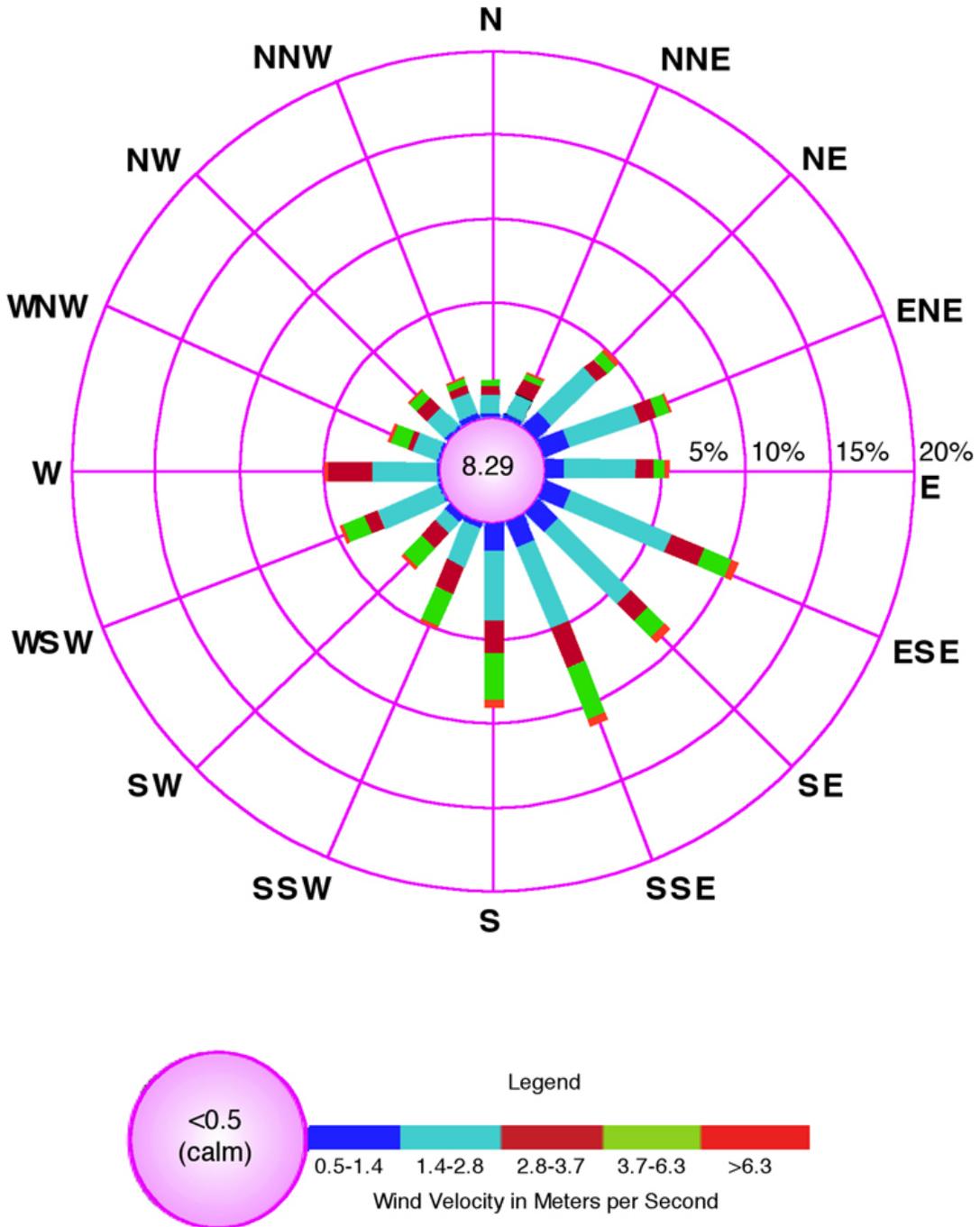
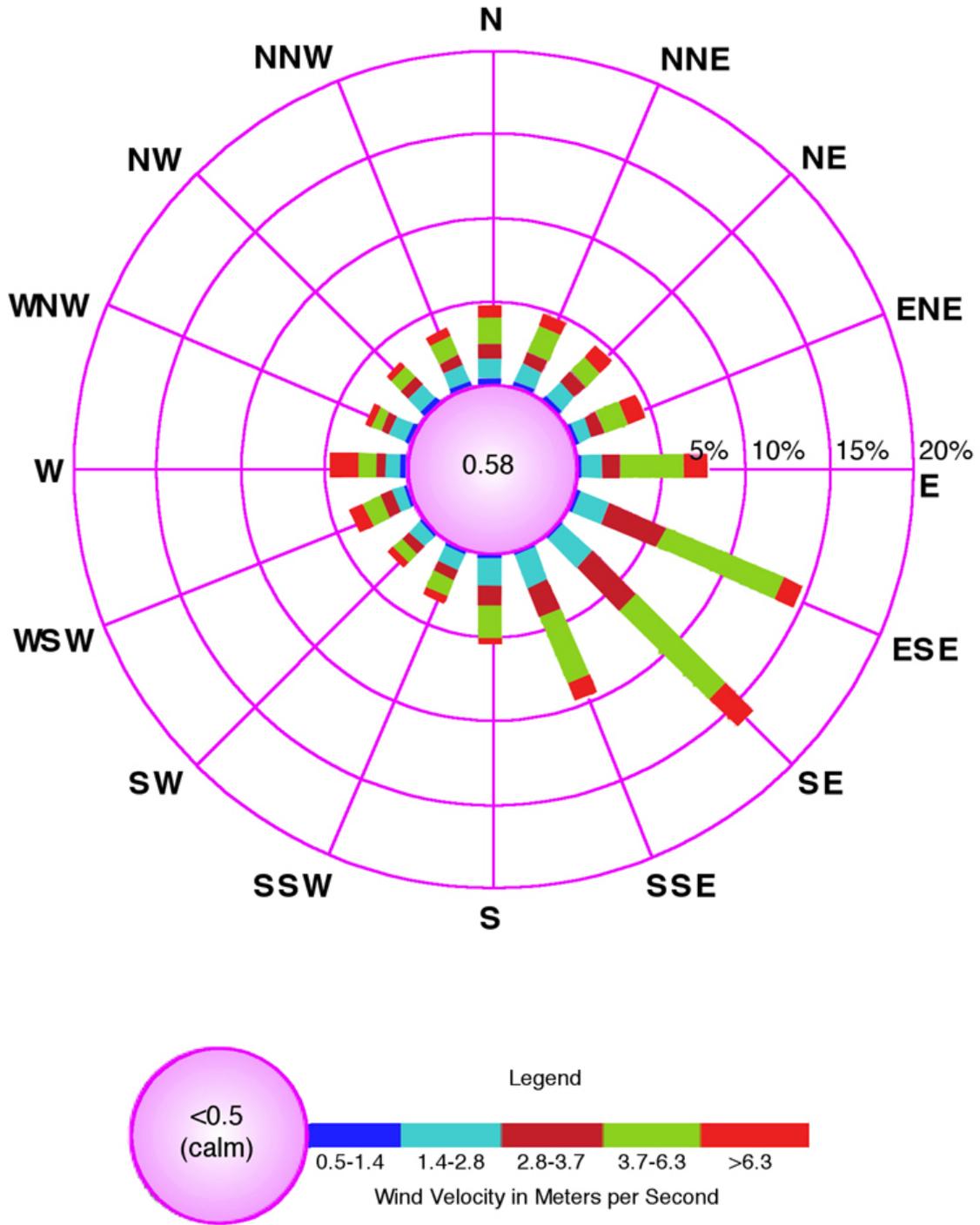


Figure 2-50. 1996 Annual Wind Rose at 10-m (33-ft.) Height at WIPP Site

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Figure 2-51. 1997 Annual Wind Rose at 10-m (33-ft.) Height at WIPP Site