3.1.5 Climate and Meteorology

The desert climate of Moab is characterized by hot summers and mild to cold winters. Weather data summarized by the Utah Climate Center for the town of Moab are presented in the following discussion (Pope and Brough 1996). January and July are the coldest and hottest months, with their respective average temperatures of about 30 °F and 81 °F. The average annual temperature is about 56 °F. Temperature extremes have ranged from –24 °F in January 1930 to 114 °F in July 1989. Temperatures of 32 °F or lower occur about 130 days a year; approximately 90 percent of those occur during November through March. Temperatures of 90 °F or higher occur about 95 days a year; approximately 25 of those days have temperatures of 100 °F or higher. The effects of temperatures higher than 90 °F on human comfort are somewhat moderated by the low relative humidity, which is typically less than 20 percent during daytime.

Average annual precipitation at Moab is 9 inches. The driest months are February and June, which have average precipitation slightly less than 0.5 inch; the wettest months are October and April, which have average precipitation of about 1.15 and 1.00 inch, respectively. Annual precipitation is greatly exceeded by potential evapotranspiration (about 50 inches annually), potential or pan evaporation (about 60 inches annually), and lake evaporation (about 38 inches annually).

The greatest precipitation amount reported at Moab in a single day was 3.99 inches on September 23, 1896, and the most precipitation in a single month was 6.63 inches in July 1918. In a 7-day period in late August and early September 1969, Moab received 6.25 inches of precipitation (Pope and Brough 1996). These large precipitation amounts are examples of high rainfall that sometimes occur in association with the late summer-early fall southwest monsoon period. For shorter term precipitation events, the greatest expected 30-minute precipitation in 100 years is about 1.3 inches, and the greatest expected 1-hour precipitation in 100 years is about 1.6 inches (Hershfield 1961).

Snowfall is light and averages only about 10 inches per year, occurring mostly from December through February. The greatest amount of snow recorded in a single day was 33 inches on December 31, 1915; that month also had the highest single-month snowfall of 46 inches (Pope and Brough 1996). These snowfalls are highly unusual; a single snowfall of greater than 6 inches is rare and occurs only about once every 3 years.

Low humidity in the region limits fog occurrences (visibility less than 0.3 mile) to fewer than 10 days per year. Thunderstorms occur about 40 days per year. Hail occurs about 3 days per year.

Prevailing winds in the Moab area are from the west-southwest (Figure 3–4). Wind speeds are less than 1 mile per hour (mph) 75 percent of the time; wind speeds are 1 to 7 mph 95 percent of the time (Figure 3–5). The highest wind speed recorded at Moab was 80 mph (Pope and Brough 1996). One tornado with wind speeds of at least 100 mph would be expected once in about 100,000 years (ANS 1983). Cold air drainage at the Moab site can occur from the northwest under stable conditions, creating a temperature inversion. These inversions typically occur in the winter months of December and January at times when snow covers the valley floor and can persist for several weeks.