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2.7 METEOROLOGY, AIR QUALITY, AND NOISE

This section describes the regional and local climatological, meteorological, and air quality characteristics applicable to Units 6 & 7. This section also provides site-specific meteorological information for use in evaluating construction and operational impacts. This section concludes with a brief description of existing noise-generating sources at the Turkey Point plant property and predicted noise levels relative to estimated background conditions.

2.7.1 REGIONAL CLIMATOLOGY

This section identifies sources of climatological data used to characterize various aspects of the climate representative of the region around Units 6 & 7, describes large-scale general climatic features and regional air quality, and their relationship to conditions at Turkey Point (Subsection 2.7.1.2). This section also summarizes normal, mean, and extreme values of several standard weather parameters (Subsection 2.7.1.3).

2.7.1.1 Data Sources

Sources of data used to characterize local and regional climatological conditions pertinent to Units 6 & 7 include the National Weather Service (NWS) at its Miami International Airport first-order station and 16 nearby cooperative network land-based reporting stations. The cooperative network stations are located within approximately 50 miles of Units 6 & 7. In addition, historical data is available from measurements made at the current meteorological monitoring stations operated in compliance with RG 1.23 and RG 1.206 under the established meteorological monitoring program in support of existing Units 3 & 4 and located on the Turkey Point plant property close to the Units 6 & 7 plant area.

The referenced land-based cooperative network locations of climatological observing stations are in Broward, Monroe, Miami-Dade, and Collier counties in Florida. Table 2.7-1 identifies the specific stations and their approximate distance and direction from the midpoint between Units 6 & 7. Figure 2.7-1 illustrates these station locations relative to Units 6 & 7.

The objective of selecting nearby, offsite climatological monitoring stations is to determine mean and extreme values, as measured at those locations, that are reasonably representative of conditions that would be expected to be observed at Units 6 & 7. The 50-mile radius shown in Figure 2.7-1 provides a relative indication of the distance between the climate stations and Units 6 & 7.

The identification of stations to be included was based on the following general considerations:

- Proximity to the plant area (i.e., within the nominal 50-mile radius indicated above, to the extent practical)

- Coverage in all directions surrounding the plant area (to the extent possible)
- Where more than one station exists for a given direction relative to the plant area, a station was chosen if it contributed one or more extreme conditions (e.g., rainfall, snowfall, maximum and/or minimum temperatures) for that general direction or added content for describing climatic conditions in the plant area

Nevertheless, if an overall extreme precipitation or temperature condition was identified for a station located within a reasonable distance beyond 50 miles, and that event was considered to be reasonably representative for the plant area, such stations were also included, regardless of directional coverage.

Normal (i.e., 30-year average), mean, and extreme values of temperature, rainfall, and snowfall are based on the following references: (NCDC Feb 2009a), (NCDC 2004), (NCDC Feb 2002a), (NCDC Feb 2006), (USU 2008), (SERCC Jun 2008a and SERCC Jun 2008b).

First-order NWS stations also record measurements, typically every hour, of other weather elements, including winds, several indicators of atmospheric moisture content (i.e., relative humidity, dew point, and wet bulb temperatures), and barometric pressure, as well as other observations when those conditions occur (e.g., fog, thunderstorms). The long-term (30 years) data from the NWS Miami International Airport first-order station was used to describe the general climatic conditions at Units 6 & 7. This is the closest first-order station to Turkey Point. Table 2.7-2, excerpted from the 2008 local climatological data (LCD) annual summary for the Miami International Airport, Florida NWS station, presents the long-term characteristics of these parameters.

Additional data sources were also used in describing the climatological characteristics of the plant area and region, including, among others, the following references: (ASCE 2005), (NOAA-CSC 2008), (NCDC Sep 2002b), (NCDC 2009b, NCDC 2008c and NCDC 2008d), (Wang and Angell Apr 1999), (USDA 2007).

2.7.1.2 General Climate Description

The location of Units 6 & 7 would be on the lower east coast of Florida within the Atlantic Coastal Ridge, which is a flat stretch of land that borders both the Atlantic Ocean and the Gulf of Mexico (see Figure 2.1-2). The Units 6 & 7 plant area is relatively flat with an approximate finished grade elevation of 25.5 feet (North American Vertical Datum 1988 [NAVD 88]). Topographic features within 5 miles and 50 miles of the plant area are addressed in Subsection 2.7.4.6. Elevations within 50 miles of the plant area range from approximate elevation –2.5 feet (NAVD 88) to the north-northeast to an approximate elevation of 86 feet (NAVD 88) to the north. Biscayne Bay is directly east of Units 6 & 7.

The state of Florida is divided into seven climate divisions by the National Oceanic and Atmospheric Administration (NOAA). A climate division represents a region within a state that is as climatically homogeneous as possible. The Units 6 & 7 plant area is located within the Lower East Coast Division (Division 6), which includes most of Miami-Dade, Broward, Palm Beach, and Martin counties (NOAA 2008a). The general climate in this division is classified as subtropical maritime (or humid subtropical) and is characterized by long and warm summers, with abundant rainfall, followed by mild, dry winters. The chief factors that govern the climate are latitude, land and water distribution, prevailing winds, storms, pressure systems, and ocean currents. The wet season, which is hot and humid, lasts from May to October, when it gives way to the dry season. The dry season features mild temperatures with some invasions of colder air, which is when little winter rainfall occurs with the passing of a cold front (NCDC Feb 2006).

The Azores-Bermuda high-pressure system (NCDC Feb 2006) exerts a powerful influence on the weather during the winter months. Within high-pressure systems, air is subsiding, and as a consequence, precipitation cannot take place. The Azores-Bermuda high remains over the Sahara Desert throughout the year, but extends over Florida during the winter. As the water around the peninsula warms in the spring, the high-pressure system over Florida weakens and the summer rains begin. Some years, the influence of the Azores-Bermuda high-pressure system is greater than others, so even in the Units 6 & 7 area; rain may fall in the winter. Because of the clockwise circulation around the western extent of the Azores-Bermuda high pressure and the proximity of the Atlantic Ocean, maritime tropical air mass characteristics prevail much of the year. Together, these factors govern late spring, summer, and early fall temperature and precipitation patterns. Florida does not experience the potential for high air pollution because it does not contain heavy industry or the climate and topographical conditions that cause air stagnation.

The El Niño-Southern Oscillation is a physical phenomenon that occurs in the equatorial Pacific Ocean where the water temperature oscillates between being unusually warm (El Niño) and unusually cold (La Niña). El Niño and La Niña are among the strongest drivers of the climate of North America, with impacts that vary across different regions. These oceanic events shift the position of the jet streams across the continent, which act to steer the fronts and weather systems. The southeast United States experiences particularly strong long-term weather shifts, with Florida feeling the greatest impacts. El Niño typically brings 30 to 40 percent more rainfall and cooler temperatures to Florida in the winter, while La Niña brings a warmer and much drier than normal winter and spring. La Niña is frequently a trigger to periodic drought in Florida (NCDC Feb 2006).

The marine influence of the Atlantic Ocean is evidenced by the low daily range of temperature and the rapid warming of cold air masses that pass to the east of the state. The regional area is subject to winds from the east and southeast about half of the time, and in several specific respects has a climate whose features differ from farther inland. One of the features is the annual precipitation for the area. During the early morning hours, more rainfall occurs along the beach areas than at Miami International Airport, while during the afternoon, the reverse situation is true (NCDC Feb 2009a). The Miami International Airport lies approximately 9 miles inland. Monthly precipitation exhibits a cyclical pattern, with the predominant maximum occurring in the summer months and the minimum occurring during the winter months (see Table 2.7-2).

The region is subject to sea/land breeze circulations, local winds that are driven by the differential heating of the air over the ocean and over the land surface. In south Florida, the existence and intensity of the sea breeze depends largely on seasonal and latitudinal factors as well as on the time of day. Sea/land breeze circulations influence local temperature, humidity, wind speed, stability, and wind direction and precipitation. The most notable sea breeze impacts are a shift in wind to the onshore direction, an increase in wind speed, a decrease in temperature, and an increase in humidity.

An even more striking difference appears in the annual number of days with temperatures reaching 90°F or higher, with inland stations having four times more than the beach areas. Minimum temperature contrasts are also particularly marked under proper conditions, with the difference between inland locations and the beach areas frequently reaching to 15 degrees or more, especially in the winter. Freezing temperatures occur occasionally in the inland suburban areas and farming districts, but rarely near the ocean (NCDC Feb 2009a).

Hurricanes affect the area often enough that they are an annual concern within the FPL service area. The months of greatest frequency are September and October. Destructive tornadoes are rare. Funnel clouds are occasionally sighted offshore and a few touch the ground briefly but significant damage is seldom reported. Waterspouts (tornadoes over water) are often visible from the beaches during the summer months; however, significant damage is seldom reported. Further information regarding tornadoes, hurricanes, and tropical cyclones is provided in Subsection 2.7.3. The months of June, July, and August have the highest frequency of dangerous lightning events (NCDC Feb 2009a).

2.7.1.3 Normal, Mean, and Extreme Climatological Conditions

This subsection addresses normal and period-of-record mean and extreme values for several standard weather elements representative of this climate setting (i.e., temperature, atmospheric water vapor, precipitation, and wind conditions). All references to seasonal periods in this subsection pertain to winter (December, January, February), spring (March, April, May), summer (June, July, August), and fall (September, October, November).

As indicated previously, Table 2.7-2 presents the more extensive set of meteorological measurements and observations made at the Miami International Airport, NWS Station, located approximately 25 miles north of Units 6 & 7. For comparison, Table 2.7-3 summarizes the annual normal daily maximum, minimum, range, and mean temperatures, as well as the normal annual rainfall and snowfall totals for Miami International Airport and 16 nearby cooperative network reporting stations. Table 2.7-4 summarizes the climatological extremes for maximum and minimum temperatures and maximum 24-hour and monthly rainfall and snowfall for Miami International Airport, and 16 nearby cooperative network reporting stations.

Long-term periods of record for temperature and precipitation for the climatological observing stations, as well as summaries of the latest 30-year station normal values from 1971 through 2000, are readily available from the National Climatic Data Center (NCDC).

2.7.1.3.1 Temperature

Daily mean temperatures are based on the average of the daily mean maximum and mean minimum temperature values. The annual daily normal temperatures are similar over the area, ranging from 73.8°F at the Fort Lauderdale Experiment Station weather observing station to 78.4°F at the Hialeah weather observing station (see Table 2.7-3), which are separated by a distance of approximately 18 miles.

Diurnal (day-to-night) temperature ranges, as indicated by the differences between the daily mean maximum and minimum temperatures, however, are more variable, ranging from 9.0°F at the Miami Beach weather observing station to 19.8°F at the Oasis Ranger Station (NCDC Feb 2002a). In general, diurnal temperature ranges among the one NWS and the 16 nearby cooperative weather observer stations are greater at those stations farther from the Atlantic Ocean and adjacent bays, and are less for those stations closer to those waters (see Figure 2.7-1).

On a monthly basis, the local climate data (LCD) summary for the Miami International Airport indicates that the daily normal dry bulb temperature is highest during July (83.7°F) and reaches a minimum (68.1°F) in January (NCDC Feb 2009a).

As Table 2.7-4 indicates, extreme maximum temperatures recorded in the vicinity of the Units 6 & 7 plant area at land-based stations have ranged from 96°F to 104°F, with the highest reading observed at the Flamingo Ranger Station on June 24, 1998. The record high temperatures for the Homestead Experiment Station (100°F), Miami 12 SSW (98°F), Miami International Airport (98°F), Royal Palm Ranger (102°F), and Tavernier (98°F) weather observing stations have been reached on two or three occasions.

The extreme minimum temperatures in the vicinity of the Units 6 & 7 plant area have ranged from 21°F to 42°F, with the lowest reading on record observed at the Pompano Beach weather observing station on February 9, 1995 (SERCC Jun 2008b).

The extreme maximum and minimum temperature data, and the historical station records that they are based on, indicate that synoptic-scale conditions can be responsible for periods of record-setting heat. Synoptic-scale conditions can also be responsible for cold air outbreaks that tend to affect the overall Turkey Point plant property. The general similarity of the respective extremes suggests that these statistics are representative of the Turkey Point site area (SERCC Jun 2008b; NCDC 2004). However, as with the variation in the weather observing station diurnal temperature ranges noted above, proximity to the water has a moderating influence on normal and extreme maximum and minimum temperatures as well.

2.7.1.3.2 Atmospheric Water Vapor

Based on a 25-year period of record, the LCD summary for the Miami International Airport NWS station (see Table 2.7-2) indicates that the mean annual wet bulb temperature is 69.6°F, with a seasonal maximum during the period June through September and a seasonal minimum during the winter months (December through February). The highest monthly mean wet bulb temperature is 76.4°F in August; the lowest monthly mean value (62.0°F) occurs during January (NCDC May 2009).

Based on a 25-year period of record, the LCD summary shows a mean annual dew point temperature of 67.1°F, also reaching its seasonal maximum and minimum during the summer (August 74.4°F) and winter (January 59.1°F), respectively (NCDC Feb 2009a).

The 30-year period of record of normal daily relative humidity averages 73 percent annually, typically reaching its diurnal maximum in the early morning (approximately 7:00 a.m.) and its diurnal minimum during the midday (around 1:00 p.m.). There is less variability in this daily pattern with the passage of weather systems, persistent cloud cover, and precipitation. Nevertheless, this daily pattern is evident throughout the year. The LCD summary shows that average early morning (7:00 a.m.) relative humidity levels are equal to or greater than 83 percent from June through February and are not much lower during the remaining months of the year (NCDC Feb 2009a).

2.7.1.3.3 Precipitation

Normal annual rainfall totals for the 17 nearby observing stations listed in Table 2.7-3 vary greatly, ranging from 44.8 inches at the Tavernier (Monroe County) observing station (approximately 31 miles to the south-southwest of the Units 6 & 7) to 66 inches at the Hialeah station (approximately 27 miles to the north) (SERCC Jun 2008b).

The LCD summary of normal rainfall totals for Miami International Airport indicates that the seasonal maximum occurs during the summer through early fall (June through September). This 4-month period accounts for approximately 54 percent (31.34 inches) of the total annual precipitation (58.53 inches). With the exception of July (5.79 inches), the normal monthly rainfall during this 4-month period is greater than 8 inches. The maximum overall normal monthly total rainfall occurs during August (8.63 inches) (NCDC March 2009b).

Historical precipitation extremes (i.e., rainfall and snowfall) are presented in Table 2.7-4 for the 17 nearby climatological observing stations. Based on the maximum 24-hour and monthly precipitation totals recorded among these stations and, more importantly, the areal distribution of these stations around the Turkey Point plant property, the data are reasonably representative of the extremes of rainfall and snowfall that might be expected to be observed at the Units 6 & 7 plant area.

The overall highest 24-hour rainfall total in the area, 15.1 inches, occurred on August 26, 2005, at the Perrine 4 W cooperative weather observing station (SERCC Jun 2008a), approximately 13 miles north-northwest of the Units 6 & 7 plant area. This extreme rainfall event was directly associated with Hurricane Katrina (see Subsection 2.7.3.5).

The overall highest monthly rainfall total in the area, 34.4 inches during October 1965, was recorded at the Pompano Beach cooperative observing station (USU 2008), located approximately 57 miles to the north-northeast of Units 6 & 7. This total represents the accumulation of 12 days of measurable precipitation during that month, with approximately 86 percent being recorded on October 14 (6.75 inches), October 15 (12.7 inches), and October 31 (10.01 inches). This monthly record rainfall was not associated with any hurricanes or tropical storms (USU 2008). Further information on extreme rainfall events in the area is presented in Subsection 2.7.4.1.2.

While snow is far from common in southeast Florida, it does fall there from time to time. Snow has never been reported at the Miami International Airport. However, snow was reported on January 19, 1977 in Homestead, Florida, where the southeastern municipal limit is approximately 4.5 miles west of the Turkey Point plant property. The total snowfall noted in the data records was estimated to be 0.05 inches (USU 2008). However, notes made by the station observer indicate that the snow melted before reaching the ground (NOAA Jan 1977). This was during one of the worst mid-1970s cold waves and snow fell that day in several parts of Dade County, Florida, but not at the NWS office at the Miami Airport, which is why the official records do not report snow.

The LCD for Miami International Airport (Table 2.7-2) indicates a trace of snow in May 1998. It is important to note that the snowfall data reported on the LCD comprises all forms of frozen precipitation, including hail. A review of data records for Miami International Airport on May 6, 1998 indicates that the minimum temperature for this day was 70°F. As a result, the trace amount reported on the Miami International Airport LCD was determined to be hail.

See Subsection 2.7.4.1.2 for more details regarding these events and a description of other station precipitation records.

2.7.1.3.4 Wind Conditions

Based on a 30-year period of record, the LCD summary for the Miami International Airport NWS station (Table 2.7-2) indicates that the annual prevailing wind direction (i.e., the direction from which the wind blows most often) is from 120 degrees (i.e., from the southeast). Monthly prevailing winds are from the southeast during the late winter through mid-spring (February through April) and again during the period summer through early fall (June through September). During October and November, the prevailing wind direction backs to more easterly. The prevailing winds are more northerly during the winter months (December through January) (NCDC Feb 2009a). These characteristics are further enhanced by the establishment of the Bermuda high in the summer, and the passage of northerly cold fronts in the winter (see Subsection 2.7.1.2).

Based on a 25-year period of record, the Miami International Airport LCD summary shows an annual mean wind speed of approximately 8.7 mph. On a seasonal basis, the highest average wind speeds occur during the spring (approximately 9.7 mph) and are lowest during the summer months (approximately 7.6 mph). On average, the LCD indicates that the highest monthly average wind speed (approximately 10.1 mph) occurs during March (NCDC Feb 2009a).

Characteristics of extreme wind conditions for design basis purposes are described in Subsection 2.7.3.3. An onsite Turkey Point meteorological monitoring program is operated in support of Units 3 & 4 for the purpose of climatological characterization as related to the dispersion of radioactive and nonradioactive effluents released into the atmosphere. Wind data summaries, based on data obtained from the Turkey Point meteorological monitoring program, are addressed in Subsections 2.7.4.3 and 2.7.4.4.

2.7.2 AIR QUALITY

This subsection addresses current ambient air quality conditions in the area and region (e.g., the compliance status of various air pollutants), projected air quality conditions resulting from the operation of Units 6 & 7, and the climatology of restrictive dispersion conditions in the region. The pollutants that are currently monitored in the region are nonradiological and include parameters such as particulate matter and select gaseous pollutants, and are described in Subsection 2.7.2.1. Based on plant design, construction, and operating basis considerations, Subsection 2.7.2.2 addresses projected air quality conditions during the operation of Units 6 & 7 and what sources would contribute to nonradiological emissions. Subsection 2.7.2.3 characterizes climatological conditions in the area and region that may be restrictive to atmospheric dispersion.

2.7.2.1 Regional Air Quality Conditions

The Turkey Point plant property is located within the Southeast Florida Intrastate Air Quality Control Region. This region includes Broward County, Dade County, Indian River County, Martin County, Monroe County, Okeechobee County, Palm Beach County, and St. Lucie County (U.S. EPA Jul 2008a). The Units 6 & 7 plant area is located in extreme southeastern Miami-Dade County. The Southeast Florida Intrastate Air Quality Control Region is in attainment for all criteria air pollutants (U.S. EPA Jul 2008b). Attainment areas are areas where the ambient levels of criteria air pollutants are designated as being “better than, unclassifiable/attainment, or cannot be classified or better than” the EPA-promulgated National Ambient Air Quality Standards (NAAQS). Criteria pollutants are those for which NAAQS have been established: sulfur dioxide, particulate matter (i.e., PM_{10} and $PM_{2.5}$, which are particles with nominal aerodynamic diameters less than or equal to 10.0 and 2.5 microns, respectively), carbon monoxide, nitrogen dioxide, ozone (1-hr and 8-hr); and lead (U.S. EPA Jul 2007).

There are three pristine areas in the state of Florida designated as *Mandatory Class I Federal Areas Where Visibility is an Important Value.* They include the Chassahowitzka Wilderness Area, Everglades National Park, and St. Marks Wilderness Area (U.S. EPA Jul 2008c). The Everglades National Park is the closest of the Class I areas, located approximately 13 miles west of the Units 6 & 7. The Chassahowitzka Wilderness Area and St. Marks Wilderness Area are located over 250 miles northwest of the Turkey Point plant property.

In addition to Class I federal areas, there are two national parks and a national wildlife refuge in the vicinity of the Turkey Point plant property that are PSD Class II federal areas. Biscayne National Park is immediately north and east of the Turkey Point plant property while the Biscayne Bay Aquatic Preserve is northeast, east, and southeast of the property. Homestead Bayfront Park is a recreational park approximately 1.7 miles north of the Units 6 & 7 plant area. The Biscayne Trail is approximately 2 miles north of the plant area. The Everglades Mitigation Bank is southwest of the Turkey Point plant property.

2.7.2.2 Projected Air Quality Conditions

The Units 6 & 7 steam supply systems and other related radiological systems would not be sources of criteria pollutants or other air toxics. Supporting equipment (e.g., diesel generators, fire pump engines), and other nonradiological emission-generating sources (e.g., cooling towers, storage tanks, and related equipment) or activities would not be significant sources of criteria pollutant emissions (see Sections 3.6 and 5.5).

Supporting equipment would only be operated on an intermittent test or emergency-use basis. Therefore, these emission sources would not impact ambient air quality levels in the vicinity of the Turkey Point plant property, nor would they be a significant factor in the design and operation of Units 6 & 7. The combination of insignificant emissions and the relatively large separation distance from the Turkey Point plant property to the Chassahowitzka Wild and St. Marks Wilderness Class I areas would not result in a significant impact on visibility as a result of project construction and facility operations.

These nonradiological emission sources would be regulated by the Florida Department of Environmental Protection (FDEP) as required under the Florida Administrative Code (F.A.C.), Title 62, Chapters 4 through 297 depending on the source type, source emissions, and permitting requirements for construction and operation.

Emission-generating sources and activities related to construction of Units 6 & 7, potential impacts, and mitigation measures are addressed in Subsection 4.4.1.2. Nonradiological emission-generating sources associated with routine facility operations are addressed further in Subsection 3.6.3.1. Characteristics of these proposed emission sources and the potential effects on air quality and visibility associated with their operation are addressed in Subsections 5.8.1 and 5.3.3, respectively.

2.7.2.3 Restrictive Dispersion Conditions

Atmospheric dispersion can be described as the horizontal and vertical transport and diffusion of pollutants released into the atmosphere. Horizontal and vertical dispersion of a pollutant along the downwind trajectory from a source is controlled primarily by wind direction variation, wind speed, and atmospheric stability.

In general, lower wind speeds represent less turbulent airflow, which is restrictive to both horizontal and vertical dispersion. And, although wind direction tends to be more variable under lower wind speed conditions (which increases horizontal transport), air parcels containing pollutants often recirculate within a limited area, thereby increasing cumulative exposure.

Major air pollution episodes are usually related to the presence of stagnating high-pressure weather systems (or anticyclones) that influence a region with light and variable wind conditions for 4 consecutive days or more. An updated air stagnation climatology report titled Air Stagnation Climatology for the United States (Wang and Angell 1999) has been published with data for the continental United States based on more than 50 years of observations. In this study, stagnation conditions were defined as 4 or more consecutive days when meteorological conditions were conductive to poor dispersion. Although inter-annual frequency varies, the data in Figures 1 and 2 of that report indicates that, on average, the region surrounding Units 6 & 7 can expect approximately 20 days per year with stagnation conditions, or approximately 4 cases or less per year, with a mean duration of 5 days or less for each case (Wang and Angell Apr 1999).

Air stagnation conditions primarily occur during an “extended” summer season (May through October). This is a result of the weaker pressure and temperature gradients, and therefore weaker wind circulations, during this period (as opposed to the winter season). Based on Wang and Angell Figures 17 to 67, the highest incidence of air stagnation is recorded between July and September, typically reaching its peak during August, when the Bermuda high-pressure system establishes. As the LCD summary in Table 2.7-2 for Miami International Airport indicates, this 3-month period coincides with the lowest monthly mean wind speeds during the year. Air stagnation is at a relative minimum within the “extended” summer season during May and June (Wang and Angell Apr 1999).

The dispersion of air pollutants is also a function of the mixing height. The mixing height (or depth) is defined as the height above the surface through which relatively vigorous vertical mixing takes place. Lower mixing heights (and wind speeds), therefore, are a relative indicator of more restrictive dispersion conditions. The United States Department of Agriculture (USDA) Forest Service Ventilation Climate Information System (USDA 2007) reports statistical data for mean monthly morning and afternoon mixing heights and wind speeds for locations in the contiguous United States, Alaska, and Hawaii. The data used to compute the statistics is based on observations for the period 1961–1990 for mixing heights and 1959–1998 for wind speed. Monthly statistics for these parameters include minimum, maximum, and mean values, average wind direction, and most frequent wind direction and are based on the longitude and latitude of the Units 6 & 7 plant area.

Table 2.7-5 summarizes minimum, maximum, and mean morning and afternoon mixing heights and surface wind speeds on a monthly, seasonal, and annual basis for the area. As atmospheric sounding measurements are still only made from a relatively small number of observation stations, these statistics represent model-derived values within the interactive database for a specific location (USDA 2007)—in this case, the Turkey Point plant property. The seasonal and annual values listed in Table 2.7-5 were derived as weighted means based on the corresponding monthly values.

From a climatological standpoint, the lowest morning mixing heights occur in the summer, and the highest morning mixing heights occur during the spring. The afternoon mixing heights reach a seasonal minimum in the fall and a maximum during the spring due to more intense daytime heating.

The wind speeds listed in Table 2.7-6 representing the location of the Units 6 & 7 plant area are reasonably consistent with the LCD summary for Miami International Airport in Table 2.7-2, in that the lowest mean wind speeds are shown to occur during the summer. This period of minimum wind speeds also coincides with the “extended” summer season described by Wang and Angell (Wang and Angell Apr 1999) that is characterized by relatively higher air stagnation conditions.

2.7.3 SEVERE WEATHER

This subsection addresses severe weather phenomena that affect the Turkey Point area and region and that are considered in the design and operating bases for Units 6 & 7. These phenomena and observed properties include:

- The frequencies of thunderstorms and lightning (Subsection 2.7.3.1)
- Observed and probabilistic extreme wind conditions (Subsection 2.7.3.2)
- Tornadoes and related wind and pressure characteristics (Subsection 2.7.3.3)
- The frequency and magnitude of hail, snowstorms, and ice storms (Subsection 2.7.3.4)
- Tropical cyclones and related effects (Subsection 2.7.3.5)

2.7.3.1 Thunderstorms and Lightning

Thunderstorms can occur in the area at any time during the year. Based on a 61-year period of record, Miami International Airport averages approximately 73 thunderstorm-days (i.e., days on which thunder is heard at an observing station) per year (see Table 2.7-2). On average, August has the highest monthly frequency of occurrence—approximately 15 days. Annually, 74 percent of thunderstorm-days are recorded during June, July, August, and September. From November through March, a thunderstorm might be expected to occur approximately 1 to 2 days per month (NCDC Feb 2009a).

The mean frequency of lightning strokes to earth can be estimated using a method attributed to the Electric Power Research Institute (EPRI), as reported by the USDA Rural Utilities Service (USDA Aug 1998). This methodology assumes a relationship between the average number of thunderstorm-days per year (T) and the number of lightning strokes to earth per square mile per year (N), where:

$N = 0.31T$

Based on the average number of thunderstorm-days per year (73) at Miami International Airport (see Table 2.7-2), the frequency of lightning strokes to earth per square mile is approximately 23 per year for the site area. This estimate of frequency is somewhat lower than the mean of the 10-year (1989 to 1999) cloud-to-ground flash density of approximately 12 to 14 flashes/square-kilometers/year or 4.6 to 5.4 flashes/square-miles/year reported by the NWS for the area that includes Units 6 & 7. Considering the fact that the estimated cloud-to-ground flash density is based on both cloud-to-ground and cloud-to-cloud lightning flashes, the actual number of lightning strokes to earth would be somewhat lower and more comparable to the estimate provided by the EPRI method (NSSL Jan 2006).

In order to estimate the frequency of lightning strokes on Units 6 & 7, a rectangular area of approximately 30 acres (0.047 square-miles) was identified to encompass the power blocks of both units. Given the estimated annual average frequency of lightning strokes to earth, the frequency of lightning strokes to Units 6 & 7 can be estimated as follows:

(23 lightning strokes/square-miles/year) x (0.047 square-miles) = 1.1 lightning strokes/year, or about once each year.

2.7.3.2 Extreme Winds

From a climatological standpoint, the frequency of peak wind speed gusts can be characterized from information in the *Climate Atlas of the United States* (NCDC Sep 2002b), which is based on observations made for the 30-year period of record from 1971 to 2000. Frequencies of occurrence were developed from values reported as the 5-second peak gust for the day. Mean annual occurrences of peak gusts greater than or equal to 50 mph, 40 mph, and 30 mph in the area range between 0.5 and 1.4 days per year, less than 9.5 days per year, and 40.5 and 50.4 days per year, respectively.

Estimating the wind loading on plant structures for design and operating bases considers the basic wind speed, which is the 3-second gust speed at 33 feet (10 meters) above the ground in Exposure Category C (ASCE 2005).

The basic wind speed is approximately 150 mph, as estimated by linear interpolation from the plot of basic wind speeds in Figure 6-1B of ASCE 7-05 (ASCE 2005) for that portion of the United States that includes the Units 6 & 7 plant area. The plant area is located in a hurricane prone region as defined in Section 6.2 of the ASCE-SEI design standard, that is, along the U.S. Atlantic Ocean and Gulf of Mexico coasts where the basic wind speed is greater than 90 mph (ASCE 2005).

From a probabilistic standpoint, this value is associated with a mean recurrence interval of 50 years. Section C6.0 (Table C6-3) of the ASCE-SEI design standard provides conversion factors for estimating 3-second-gust wind speeds for other recurrence intervals (ASCE 2005). Based on this guidance, the 100-year return period value is determined by multiplying the 50-year return period value by a scaling factor of 1.07, which yields a 100-year return period 3-second-gust wind speed of approximately 161 mph.

2.7.3.3 Tornadoes

The design basis tornado characteristics applicable to structures, systems, and components important to safety include the following parameters as identified in RG 1.76:

- Maximum wind speed
- Translational speed
- Maximum rotational speed
- Radius of maximum rotational speed
- Pressure drop
- Rate of pressure drop

Based on Figure 1 of RG 1.76 and the coordinates for the midpoint between the Units 6 & 7 shield buildings (see FSAR Subsection 2.1.1.2), the Turkey Point plant property is located within Tornado Intensity Region II. The design basis tornado characteristics for Tornado Intensity Region II (RG 1.76, Revision 1) that apply to the plant property are:

- Maximum wind speed = 200 mph
- Translational speed = 40 mph
- Maximum rotational speed = 160 mph
- Radius of maximum rotational speed = 150 feet
- Pressure drop = 0.9 pounds per square inch (psi)
- Rate of pressure drop = 0.4 psi/sec

Revision 1 of RG 1.76 retains the 1E-07 exceedance probability for tornado wind speeds, the same as the original version of that RG. Revision 2 of NUREG/CR-4461 describes the relationship between the previous use of the original Fujita scale of wind speed ranges for different tornado intensity classifications and the Enhanced Fujita Scale wind speed ranges in the revised analysis of tornado characteristics. That document was the basis for most of the technical revisions to RG 1.76.

Tornadoes observed within a 2-degree latitude and longitude square, centered on the Units 6 & 7 plant area, are used to characterize their frequency of occurrence from a climatological standpoint. The data was obtained from the NCDC *Storm Events* database of tornado occurrences by location, date, and time; starting and ending coordinates; Fujita-scale wind speed classification (or F-scale); Pearson-scale path length and path-width dimensions (or P-scale); and other storm-related statistics (NCDC 2008c).

The 2-degree square area for this evaluation includes all or portions of six counties in Florida. All tornado occurrences within the 2-degree latitude/longitude square were included. Through the nearly 58-year period from 1950 through 2007, the records in the database indicate that a total of 297 tornadoes occurred within the 2-degree latitude/longitude square (NCDC 2008c).

Tornado F-scale classifications (with corresponding wind speed range based on the original Fujita scale of wind speeds) and respective frequencies of occurrence are as follows:

Tornado F-Scale Classification	Corresponding Wind Speed Range in Meters Per Second	Respective Occurrences
F5	≥117 (261–318 mph)	0
F4	93 to 116 (207–260 mph)	0
F3	70 to 92 (158–206 mph)	4
F2	50 to 69 (113–157 mph)	17
F1	33 to 49 (73–112 mph)	65
F0	18 to 32 (40–72 mph)	211

Twelve of the tornadoes are assigned an undefined F-scale magnitude of “F” in the *Storm Events* database, because the begin location and end location are both unknown and most have no description of the incident available. and are assumed to be comparable to an F0 classification (NCDC 2008c).

Tornadoes have occurred in the area during every month of the year with a peak frequency occurring in the summer. On a monthly basis, the greatest number of events has been recorded in June, followed by the second-highest count during August, followed by the third highest count during May. The smallest amount of the tornadoes have occurred during the winter months (NCDC 2008c).

Tornadoes that occur over a body of water are called waterspouts. Waterspouts probably occur more frequently in the Florida Keys than anywhere else in the world (NWS Jan 2007). Waterspouts are generally broken into two categories: fair weather waterspouts and tornadic waterspouts. Tornadic waterspouts are simply tornadoes that form over water, or move from land to water. They have the same characteristics as a land tornado (NWS Jan 2007). The maximum rotational wind speed of waterspouts has been estimated to be as high as 219 miles per hour (AMS Mar 1977). Fair weather waterspouts are quite common over south Florida’s coastal waters from late spring to early fall. The term “fair weather” comes from the fact that this type of waterspout forms during fair and relatively calm weather, often during the early to mid-morning and sometimes during the late afternoon. Waterspouts can move onshore and become tornadoes and cause significant damage and injuries to people. However, typically, fair weather waterspouts dissipate rapidly when they make landfall, and rarely penetrate far inland (NWS Jan 2007).

It is estimated that the Florida Keys area experiences 50 to 500 waterspouts each year. In terms of waterspouts per unit area, the most active region after the Florida Keys is the entire southeast Florida coast from Stuart, Florida to Homestead, Florida (AMS Mar 1977). Conventional data-reporting sources for the Florida Keys area likely underestimate the actual yearly waterspout population. This tendency is likely present in the storm data compiled by the NCDC for the Florida Keys (Monroe County), which only reports 421 waterspouts for the period of record January 1, 1950 through April 30, 2008 (NCDC 2008b). The tendency for underreporting in the Florida Keys may be attributed to the fact that much of the population is concentrated in a few areas of much higher density, such as the city of Key West, and the duration of a waterspout is only approximately 14 minutes.

2.7.3.4 Hailstorms, Snowstorms, and Ice Storms

Frozen precipitation in the area typically occurs in the form of hail. The frequency of occurrence and characteristics of these types of weather events are based on the following two references: the latest version of *The Climate Atlas of the United States* (NCDC Sep 2002b), which has been developed from observations made over the 30-year period of record from 1961 to 1990, and the NCDC *Storm Events* database for Florida (NCDC 2009b) based on observations for the period of January 1950 to May 2008.

Though hail can occur at any time of the year in the area and is associated with well-developed thunderstorms, it has been observed primarily during late spring and the summer months (May through August), reaching a peak during May, and occurring least often from late fall through the winter months (December, January, and February) (NCDC 2008c).

The *Climate Atlas* (NCDC Sep 2002b) indicates that most of Miami-Dade County can expect, on average, hail with diameters of 0.75 inch or greater approximately one day per year. The *Climate Atlas* also shows a similar frequency in the eastern portions of the adjacent Broward County. However, a relatively lower frequency of occurrence is indicated for the west portion of Broward County and the extreme western and southern portions of Miami-Dade County (less than 0.5 days per year). Other nearby counties of Collier and Monroe, which are directly adjacent to the Gulf of Mexico, can expect 0.75-inch or greater hail about 0.5 days or less per year. The *Climate Atlas* indicates that the occurrence of hail with diameters greater than or equal to 1.0 inch is relatively less frequent over the area and confined to the northeastern portion of Miami-Dade County and the southeastern portion of Broward County (NCDC Sep 2002b).

NCDC cautions that hailstorm events are point observations and somewhat dependent on population density. This may explain the areal extent of higher frequencies around Miami-Dade and Broward Counties, and what could be interpreted as generally lower frequencies of occurrence in the other nearby counties. The slightly higher annual mean frequency of approximately 0.5 to 1 day per year with hail greater than or equal to 0.75 inch in diameter is considered to be a representative indicator for the Turkey Point site.

Hailstorm events within Miami-Dade and surrounding counties have generally reported maximum hailstone diameters ranging between 1.75 and 4.0 inches. Golf ball-size hail (approximately 1.75 inches in diameter) is not a rare occurrence, having been observed numerous times in the area (NCDC 2009b). However, in terms of extreme hailstorm events, the NCDC *Storm Events* database indicates that grapefruit- to softball-size hail (approximately 4.0 to 4.5 inches in diameter, respectively) was observed on March 29, 1963 (4.0 inches), in Miami-Dade County. The exact location of this event is unknown (NCDC 2009b).

Winters bring no accumulation of snowfall in southeastern Florida. Snow has never been reported at the Miami International Airport; however, snow was reported in January 1977, in Homestead, Florida. The total snowfall was estimated to be only 0.05 inches (USU 2008). However, notes made by the station observer indicate that the snow melted before reaching the ground (NOAA Jan 1977). This was during one of the worst mid-1970s cold waves and snow fell that day in several parts of Dade County, Florida, but not at the NWS office at the Miami International Airport, which is why the official records do not reflect the reports of snow.

The *Storm Events* database for Florida (NCDC 2009b) indicates that ice storms have not been reported in Broward, Collier, Monroe, or Miami-Dade Counties in the period January 1, 1950 through March 31, 2009. In addition, the *Climate Atlas* (NCDC Sep 2002b) indicates that the mean numbers of days per year with frozen precipitation in all counties of southeastern Florida is zero.

2.7.3.5 Tropical Cyclones

Tropical cyclones include not only hurricanes and tropical storms, but systems classified as tropical depressions, subtropical storms, subtropical depressions, and extratropical storms. This characterization considers all “tropical cyclones” (rather than systems classified only as hurricanes and tropical storms) because storm classifications are generally downgraded once landfall occurs and the system weakens, although they may still result in significant rainfall and extreme wind events as they travel through the region.

NOAA’s Coastal Services Center (NOAA-CSC) provides a comprehensive historical database, extending from 1851 through 2007, of tropical cyclone tracks based on information compiled by the National Hurricane Center. This database indicates that a total of 53 tropical cyclone centers or storm tracks (including extratropical storms) have passed within 100 nautical miles of Turkey Point, during this historical period (NOAA-CSC 2007). Storm classifications and respective frequencies of occurrence spanning this 157-year period of record are:

- Hurricanes — Category 5 (3), Category 4 (10), Category 3 (13), Category 2 (8), Category 1 (16)
- Extratropical storms — 3

Wind speeds (1-minute average) corresponding to each of the Saffir-Simpson Hurricane categories are listed below:

Saffir-Simpson Hurricane Categories	
Classification	Wind Speed (mph)
Category 1	74–95
Category 2	96–110
Category 3	111–130
Category 4	131–155
Category 5	>155

Tropical cyclones have occurred as early as June and as late as November. During the months of August through October, hurricanes occur with increasing frequency. Three Category 5 hurricanes tracked within 100 nautical miles of Turkey Point. Two were no-named hurricanes occurring in September of 1935 and September of 1947. Hurricane Andrew, the third Category 5 hurricane, occurred in August 1992.

Tropical cyclones are responsible for at least 14 separate rainfall records among the 17 NWS and cooperative observer network stations listed in Table 2.7-4, which includes eight 24-hour (daily) rainfall totals and 6 monthly rainfall totals (see Table 2.7-4). On August 26, 2005, a 24-hour record was set at the Perrine 4 W cooperative observing station as a result of Hurricane Katrina (15.1 inches) (SERCC Jun 2008a).

Monthly station records were established due to partial contributions from the following tropical cyclones (NOAA-CSC 2008):

- Hurricane Donna and Tropical Storm Florence in September 1960 (21.95 inches at Dania 4 WNW; 27.54 inches at Miami 12 SSW; 24.4 inches at Miami International Airport; and 29.5 inches at Perrine 4 W).

  Hurricane Donna was responsible for unprecedented damage as it moved along a path through the coastal areas of southern and western Florida. The first advisories for Donna were given on September 2, 1960 when it was located about 700 miles west of the Lesser

Antilles and had maximum winds estimated at 135 mph. The hurricane tracked west-northwestward and on September 10 moved into the central Florida Keys. The last report from the Tavenier station estimated the wind speed to be 135 mph. Wind gusts of 97 mph were reported at the Miami Airport Tower (NOAA-CSC 2008).

Florence intensified into a tropical storm on September 18, 1960 north of Puerto Rico and moved westward. Wind speeds reached 50 to 55 mph. The storm weakened the next day as it moved westward to the Florida Straits and just north of Cuba, then moved slowly northward over southern Florida on September 23 and 24 with accompanying heavy rains before turning northwestward and then into the Gulf of Mexico (NOAA-CSC 2008). This tropical storm was responsible for the 24-hour maximum rainfall (8.4 inches) at the Miami Beach cooperative observing station.

As indicated above, significant amounts of rainfall can still be associated with a tropical cyclone once the system moves inland. Wind speed intensity, however, noticeably decreases as the system passes over terrain and is subjected to increased frictional forces. Examples of such effects associated with some of the more intense tropical cyclones that have passed within 100 nautical miles of Turkey Point are:

- Hurricane Andrew (August 1992). Hurricane Andrew (Category 5) caused an estimated $26 billion in damage in the United States making it the most expensive natural disaster at that time in the United States. Andrew dropped sufficient rain to cause local floods even though the hurricane was relatively small and generally moved fast. Rainfall totals in excess of four to seven inches were recorded in southeast Florida. At landfall in southern Miami-Dade County, Florida, the central pressure was 922 millibars, which was the third lowest this century (after the 1935 Florida Keys Labor Day storm and Hurricane Camille in 1969) for a land falling hurricane in the U.S. The storm devastated Miami-Dade County then moved northwest across the Gulf of Mexico to make a second landfall in a sparsely populated area of south-central Louisiana as a Category 3 storm on August 26. Hurricane Andrew is historic because this is the first time that a hurricane significantly affected a commercial nuclear power plant. The eye of the storm, with sustained winds of up to 145 mph and gusts of 175 mph, passed over the Turkey Point plant property and caused extensive onsite and offsite damage. However, there was no damage to the safety-related systems of Units 3 & 4 except for minor water intrusion and some damage to insulation and paint (USNRC 1993).

- Hurricane Katrina (August 2005). Katrina was one of the strongest storms to impact the coast of the United States during the last 100 years. Hurricane Katrina developed initially as a tropical depression on August 23, 2005 and strengthened into Tropical Storm Katrina the next day. It then moved slowly along a northwesterly then westerly track through the Bahamas, increasing in strength during this time. A few hours before landfall in south Florida on August 25, Katrina strengthened to become a Category 1 hurricane. Landfall occurred between

Hallandale Beach and North Miami Beach, Florida, with maximum sustained winds of 81 mph. The storm continued to move southwest across the tip of the Florida peninsula. Katrina was responsible for the maximum reported 24-hour rainfall (15.1 inches) at the Perrine 4 W cooperative station on August 26, 2005 (SERC Jun 2008a). This observation agrees with an analysis conducted by NOAA's Climate Prediction Center that showed parts of the region received heavy rainfall, more than 15 inches in some locations, which caused localized flooding (NOAA-CSC 2008).

2.7.4 LOCAL METEOROLOGY AND TOPOGRAPHY

Data acquired by the NWS at its Miami International Airport, first-order station 16, and nearby cooperative network reporting stations, as compiled and summarized by the NCDC, the Utah State GIS Climate Search, Southeast Regional Climate Center (USU 2008; NCDC Feb 2002a; NCDC Sep 2002b; SERCC Jun 2008a and SERCC Jun 2008b), were used to characterize normals and period-of-record means and extremes of temperature, rainfall, and frozen precipitation in the vicinity of Units 6 & 7. Subsection 2.7.1.1 identifies the sources of these climatological summaries and other data resources. The approximate distances and directions of these climatological observing stations relative to the Units 6 & 7 plant area are listed in Table 2.7-1; their locations are shown in Figure 2.7-1.

As indicated in Subsection 2.7.1.1, first-order NWS stations also record measurements, typically every hour, of other weather elements, including winds, relative humidity, dew point, and wet bulb temperatures, barometric pressure, and other observations when those conditions occur (e.g., fog, thunderstorms).

Besides using data from these nearby climatological observing stations, measurements from the tower-mounted meteorological monitoring system that currently supports Units 3 & 4 were also used to characterize dispersion conditions. Refer to Subsections 6.4.2 and 6.4.3 for a description of relevant details about this pre-application monitoring program, including: tower location; terrain features and elevations in the vicinity of Units 6 & 7; instrumentation and measurement levels; data recording and processing; and system operation, maintenance, and calibration activities.

Sea breezes are an almost daily occurrence during the summer. However, their strength and degree of inland penetration vary daily depending on the direction and speed of the prevailing wind. Sea/land breeze circulations influence local temperature, humidity, wind speed, and wind direction and precipitation. The most notable sea breeze impacts are a shift in wind to the onshore direction, an increase in wind speed, a decrease in temperature, and an increase in humidity.

2.7.4.1 Normal, Mean, and Extreme Values

Subsection 2.7.1.3 summarizes normals and period-of-record means and extremes for several standard weather elements (i.e., temperature, atmospheric water vapor, precipitation, and wind conditions).

To substantiate that mean and extreme values at these stations, based on their long-term records of observations, are representative of conditions that might be expected at the Units 6 & 7 plant area, this subsection provides additional details regarding the individual station records from which the values presented in Subsection 2.7.1.3 were obtained.

Historical extremes of temperature, rainfall, and snowfall are listed in Table 2.7-4 for the NWS first-order station and cooperative observing stations in the Turkey Point area.

2.7.4.1.1 Temperature

Characteristics of the normal daily maximum and minimum temperatures, the daily mean temperatures, and the diurnal temperature ranges for the nearby climatological observing stations that make such measurements are addressed in Subsection 2.7.1.3.1 and presented in Table 2.7-3. The overall maximum and minimum temperature extremes observed in the Turkey Point area are summarized in Subsection 2.7.1.3.1 as well.

Extreme maximum temperatures recorded in the region have ranged from 96°F to 104°F for land-based observations, with the highest reading observed at the Flamingo Ranger Station on June 24, 1998. As Table 2.7-4 and the accompanying notes show, the record high temperature for several stations have been reached on two or three occasions, e.g., Homestead Experiment Station, Miami 12 SSW, Miami International Airport, Royal Palm Ranger Station, and Tavernier (NCDC 2004; NCDC Feb 2002a; NCDC July 2005; NCDC Feb 2006; USU 2008; SERCC Jun 2008a).

Extreme minimum temperatures in the region have ranged from 21°F to 42°F, with the lowest reading on record observed at the Pompano Beach cooperative station (approximately 57 miles to the north-northeast) on February 9, 1995. More noteworthy, though, Table 2.7-4 and the accompanying notes indicate that record low temperatures were also set at the NWS Miami International Airport, Flamingo Ranger Station, Miami Beach, Perrine 4 W, Tamiami Trail 40 Mile Bend, and Tavernier stations during a cold wave outbreak on December 24 and 25, 1989. Record minimum temperatures for the Fort Lauderdale, Fort Lauderdale Experiment Station, Miami 12 SSW, and Royal Palm Ranger cooperative stations were all set on January 20, 1977 (NCDC Feb 2002a; NCDC 2004; NCDC July 2005; NCDC Feb 2006; SERCC Jun 2008a; USU 2008).

The extreme maximum and minimum temperature data indicates that synoptic-scale conditions responsible for periods of record-setting excessive heat as well as significant cold air outbreaks tend to affect the overall Turkey Point area. The similarity of the respective extremes and their dates of occurrence suggest that these statistics are reasonably representative of the temperature extremes that might be expected to be observed at the Units 6 & 7 plant area.

2.7.4.1.2 Atmospheric Water Vapor

Annual, seasonal, and monthly characteristics of the wet bulb and dew point temperatures, along with relative humidity (including diurnal variations), based on measurements at the nearby Miami International Airport NWS station are described in Subsection 2.7.1.3.2.

2.7.4.1.3 Precipitation

Characteristics of the normal annual rainfall and snowfall totals for the 17 nearby land-based climatological observing stations reporting precipitation are described in Subsection 2.7.1.3.3 and presented in Table 2.7-3. The overall maximum daily and monthly totals observed in the Turkey Point area for these forms of precipitation are summarized in Subsection 2.7.1.3.3 as well.

Because precipitation is a point measurement, mean and extreme statistics, such as individual storm event, or daily or cumulative monthly totals vary from station to station. Assessing the variability of precipitation extremes across the area, in an effort to evaluate whether the available long-term data are representative of conditions at the site, largely depends on station coverage.

Historical precipitation extremes (rainfall and snowfall) are presented in Table 2.7-4 for the 17 nearby climatological observing stations**.** Maximum recorded 24-hour rainfall totals range from 7.5 inches at the Tamiami Trail 40 Mile Bend station, 38 miles northwest of the Turkey Point plant property, to 15.1 inches at the Perrine 4 W observing station, approximately 13 miles to the north-northwest. The maximum 24-hour rainfall total at the Perrine 4 W cooperative weather observing station (SERCC Jun 2008a) was directly associated with Hurricane Katrina. Maximum monthly rainfall totals range from 17.5 inches at Miami Beach, approximately 28 miles to the northeast, to 34.4 inches at the Pompano Beach observing station, approximately 57 miles to the north-northeast (USU 2008).

The 34.4 inches during October 1965 recorded at Pompano Beach represents the accumulation of 12 days of measurable precipitation during that month, with approximately 86 percent being recorded on October 14 (6.75 inches), October 15 (12.7 inches), and October 31 (10.01 inches). During the 2-day period of October 14 and 15, heavy rainfall was brought about by lifting of conditionally unstable layers of air to saturation as a result of a stationary front lingering over extreme southern Florida (NHRL Apr 1967; NOAA 2008b). On October 31, 1965, a persistence easterly wind flow off of the ocean resulted in occasional showers and thunderstorms (NOAA 2008b).

In general, when monthly rainfall records are established at a given weather observing station, regardless of their cause(s), significant amounts of precipitation are usually measured at most of the other stations in the site area, particularly when associated with the passage of tropical cyclones. This is usually not the case for maximum 24-hour rainfall records because of the occurrence of more local-scale events such as thunderstorms. For the 24-hour rainfalls from Table 2.7-4, the four most inland stations relative to easterly storms (Flamingo Ranger Station, Oasis Ranger Station, Royal Palm Ranger Station, and Tamiami Trail 40 Mile Bend) report significantly less rainfall than the other stations. They average 8.33 inches while the balance averages 11.73 inches. It is true that not all of the coastal stations report high consistently, but it is true the inland stations report low consistently.

Snow is far from common in southeast Florida and has never been reported at the Miami International Airport. However, snow was reported on January 19, 1977, in Homestead, Florida. The total snowfall was estimated to be 0.05 inches (USU 2008). This was during one of the worst mid-1970s cold waves and snow fell that day in several parts of Miami-Dade County, Florida, but not at the NWS office at the Miami International Airport, which is why the official records do not reflect the snow.

2.7.4.2 Fog

The closest station to the Turkey Point plant property at which observations of fog are made and routinely recorded is the Miami International Airport NWS station, approximately 25 miles to the north. The 2009 LCD summary for this station (Table 2.7-2) indicates an average of approximately 5 days per year of heavy fog conditions, based on a 45-year period of record. The NWS defines heavy fog as fog that reduces visibility to one-quarter mile or less.

On a seasonal basis, heavy fog conditions occur most often during the winter months (December through February), reaching peak frequency in January, and averaging 0.9 days per month. Heavy fog conditions occur least from May through September, averaging much less than one day per month (NCDC Feb 2009a).

The frequency of heavy fog conditions at the Units 6 & 7 plant area would be expected to be very similar to the Miami International Airport NWS station observations because of their proximity to each other (about 25 miles). This is consistent with the low frequency of occurrence reported in *The Climate Atlas of the United States* (NCDC Sep 2002b), which indicates an annual average frequency of 5.5 to 10.4 days per year in the area that includes the Turkey Point plant property. The seasonal variation is very similar to that in the 2009 LCD for the Miami International Airport NWS station (NCDC Feb 2009a).

Enhancement of naturally occurring fog conditions resulting from the operation of the Units 6 & 7 circulating water system and service water system cooling towers is addressed in Subsection 5.3.3.1.

2.7.4.3 Average Wind Direction and Wind Speed Conditions

The distribution of wind direction and wind speed is an important consideration when characterizing the dispersion climatology of a site. Long-term average wind motions at the macro- and synoptic scales (i.e., on the order of several thousand down to several hundred kilometers) are influenced by the general circulation patterns of the atmosphere at the macroscale and by large-scale topographic features (e.g., land-water interfaces such as coastal areas). These characteristics are addressed in Subsection 2.7.1.2.

Site-specific or microscale (i.e., 2 kilometers or less) wind conditions, while they may reflect these larger-scale circulation effects, are influenced primarily by local and, to a lesser extent, meso- or regional-scale (i.e., up to approximately 200 kilometers) topographic features. Wind measurements at these smaller scales are available from the onsite Units 3 & 4 meteorological monitoring program, and these were compared to data recorded at the Miami International Airport NWS station.

A description of the Units 3 & 4 meteorological monitoring program is provided in Section 6.4. Wind direction and wind speed measurements are made at two levels on a guyed 60-meter primary instrumented tower (the lower level at 10 meters and the upper level at 60 meters).

Figures 2.7-2 through 2.7-13 present annual and seasonal wind rose plots (i.e., graphical distributions of the direction from which the wind is blowing) and wind speeds for each of 16, 22.5-degree compass sectors centered on north, north-northeast, northeast, etc., for the 10- and 60-meter levels based on measurements for three annual periods (2002, 2005, and 2006). These years were selected as a period of data that is defendable, representative, and complete, but not older than 10 years from the date of the application, in accordance with RG 1.23.

As shown in Figure 2.7-2, the wind direction distribution at the 10-meter level generally follows an easterly orientation on an annual basis. The prevailing wind (i.e., the direction from which the wind blows most often) is from the east; with approximately 41 percent of the winds blowing from the east-northeast through east-southeast sectors. Conversely, winds from the west-northwest through west-southwest sectors occur approximately 7 percent of the time.

Seasonally, winds from the southeast quadrant predominate during the spring and summer seasons (March through August) (Figures 2.7-4 and 2.7-5). During the winter season, the prevailing wind direction shifts to the north-northwest because of increased cold frequency of frontal passages. Winds from the northeast quadrant predominate during the fall season

(September through November) (Figure 2.7-6). Plots of individual monthly wind roses at the 10-meter measurement level are presented in Figure 2.7-7, Sheets 1 to 12.

Wind rose plots based on measurements at the 60-meter level are shown in Figures 2.7-8 through 2.7-13. By comparison, wind direction distributions for the 60-meter level are fairly similar to the 10-meter level wind roses on composite annual and seasonal bases in terms of the predominant directional quadrants and variation over the course of the year. Plots of individual monthly wind roses at the 60-meter measurement level are presented in Figure 2.7-13, Sheets 1 to 12.

Wind information summarized in the LCD for the Miami International Airport NWS station (Table 2.7-2) indicates a prevailing southeast wind direction on an annual basis, as well as seasonal variations (NCDC Feb 2009a), that appear to be somewhat similar to the 10-meter level wind flow at the Turkey Point plant property. A comparison of monthly prevailing wind directions for both locations indicates that the prevailing winds are generally within the same quadrant at both locations. Differences between the two wind direction distributions are attributable to many factors such as topographic setting, sensor exposure, instrument threshold and accuracy, and length of record.

Table 2.7-6 summarizes seasonal and annual mean wind speeds based on measurements from the upper and lower levels of the meteorological tower operated in support of Units 6 & 7 during annual periods in 2002, 2005, and 2006, and from wind instrumentation at the Miami International Airport NWS station based on a 24-year period of record (NCDC Feb 2009a). The elevation of the wind instruments at the Miami International Airport NWS station is reasonably comparable to the lower level measurements at the Turkey Point plant property.

Annually, mean wind speeds at the 10- and 60-meter levels are 3.8 and 5.6 meters per second, respectively, at the Turkey Point plant property. The annual mean wind speed at the Miami International Airport (3.9 meters per second), is almost identical to the 10-meter level at Turkey Point, differing by only 0.1 meters per second. Seasonal average wind speeds at Miami International Airport are very similar throughout the year except during the winter and spring seasons when speeds average approximately 0.3 meters per second higher than those at Turkey Point. Seasonal mean wind speeds for both locations follow the same pattern described in Subsection 2.7.2.3 in relation to the seasonal variation of relatively higher air stagnation and restrictive dispersion conditions in the region. It should be noted that this is only a qualitative comparison since short term conditions at Turkey Point are compared to long-term trends at Miami.

There were few calm winds recorded by the Units 3 & 4 meteorological monitoring system at the 10-meter level and the 60-meter level during the annual periods in 2002, 2005, and 2006. [Note: Wind speeds greater than 0.5 mph (starting threshold of sensor) are considered non-calm winds.

However, 42 hours of actual calm conditions occurred over the 2002, 2005, and 2006 periods. These hours, however, were not considered valid and were not used in the meteorological data set.]

2.7.4.4 Wind Direction Persistence

Wind direction persistence is a relative indicator of the duration of atmospheric transport from a specific sector width to a corresponding downwind sector width that is 180 degrees opposite. Atmospheric dilution is directly proportional to the wind speed (other factors remaining constant). When combined with wind speed, a wind direction persistence/wind speed distribution further indicates the downwind sectors with relatively more or less dilution potential (higher or lower wind speeds, respectively) associated with a given transport wind direction.

Tables 2.7-7 and 2.7-8 present wind direction persistence/wind speed distributions (in hours) based on measurements from the Units 3 & 4 meteorological monitoring program for three annual periods (2002, 2005, and 2006). The distributions account for durations ranging from 1 hour to 48 hours for wind directions from 22.5-degree upwind sectors centered on each of the 16 standard compass radials (i.e., north, north-northeast, northeast, etc.) and for wind speed groups greater than or equal to 5, 10, 15, 20, 25, 30, 35, and 40 mph. Distributions are provided for wind measurements made at the lower (10-meter) and the upper (60-meter) tower levels, respectively, identified in the preceding subsection.

At the 10-meter level, the longest persistence period is 36 hours for winds from the east-northeast and southeast sectors. The durations appear only in the lowest two wind speed groups for wind speeds greater than or equal to 5 and 10 mph. Persistence periods lasting for at least 12 hours are indicated for several direction sectors for wind speeds greater than or equal to 5, 10, 15 and 20 mph, including winds from the northeast through south directions; and periods of 12 hour durations are also indicated from the north and north-northwest sectors for wind speed groups greater than or equal to 5 and 10 mph. For wind speeds greater than or equal to 25 mph, maximum persistence is limited to 4 hours.

At the 60-meter level, the longest persistence period is 36 hours and occurs for winds from the northeast, east-northeast, and north-northwest sectors (Table 2.7-8) for wind speeds greater than or equal to 5 and 10 mph and from the northeast sector for wind speeds greater than or equal to 15 and 20 mph. For wind speeds greater than or equal to 25 mph, maximum persistence periods are limited to 12 hours for winds from the northeast and east-southeast sectors.

2.7.4.5 Atmospheric Stability

Atmospheric stability is a relative indicator of the potential diffusion of pollutants released into the ambient air. Atmospheric stability is based on the delta temperature (ΔT) method defined in Table 1 of Revision 1 to RG 1.23.

The method classifies stability based on the temperature change with height (i.e., the difference in °C per 100 meters or ΔT). Stability classifications are assigned according to the following criteria:

- Extremely Unstable (Class A): $\Delta T \leq -1.9°C$
- Moderately Unstable (Class B): $-1.9°C < \Delta T \leq -1.7°C$
- Slightly Unstable (Class C): $-1.7°C < \Delta T \leq -1.5°C$
- Neutral Stability (Class D): $-1.5°C < \Delta T \leq -0.5°C$
- Slightly Stable (Class E): $-0.5°C < \Delta T \leq +1.5°C$
- Moderately Stable (Class F): $+1.5°C < \Delta T \leq +4.0°C$
- Extremely Stable (Class G): $+4.0°C < \Delta T$

The diffusion capacity is greatest for extremely unstable conditions and decreases progressively through the remaining unstable, neutral, and stable classifications.

During the 3-year period of record that includes calendar years 2002, 2005, and 2006 at Turkey Point, ΔT was determined from the difference between temperature measurements made at the 60- and 10-meter tower levels. Seasonal and annual frequencies of atmospheric stability class and associated 10-meter level mean wind speeds for this period of record are presented in Table 2.7-9.

The data in Table 2.7-9 indicates a predominance of neutral stability (Class D) and slightly stable (Class E) conditions throughout the year, 28.5 percent and 36.5 percent of the time for these stability classes, respectively, and 65 percent combined. Extremely unstable conditions (Class A) are more frequent during the spring and occur least often during the summer and autumn months. Such extremely unstable conditions are attributed to relatively lower mean wind speeds and greater insolation in the summer and higher mean wind speeds and lesser insolation in the spring. Extremely stable conditions (Class G) are most frequent during the winter (approximately 10 percent of the time), owing in part to increased radiational cooling at night, and occur least often during the summer months.

Joint frequency distributions of wind speed and wind direction by atmospheric stability class and for all stability classes combined for the 10-meter and 60-meter wind measurement levels at Turkey Point are presented in Table 2.7-10 and Table 2.7-11 respectively, for the 3-year period of record that includes calendar years 2002, 2005, and 2006. The 10-meter level joint frequency distributions are used to evaluate short-term dispersion estimates for accidental atmospheric releases (see Subsection 2.7.5) and to evaluate long-term diffusion estimates of routine releases to the atmosphere (see Subsection 2.7.6).

2.7.4.6 Topographic Description

The Turkey Point plant property is an 11,000-acre tract in a rural area of Miami-Dade County, Florida. Units 6 & 7 would be constructed on 218 acres south of Units 3 & 4. The combined power block footprints of Units 6 & 7 encompass an area of approximately 6 acres. The finished grade of Units 6 & 7 is approximately elevation 25.5 feet (NAVD 88).

Terrain features within 50 miles, based on digital map elevations, are illustrated in Figure 2.7-1. Terrain elevation profiles along each of the 16 standard 22.5-degree compass radials out to a distance of 50 miles are shown in Figure 2.7-14, Sheets 1 through 6. Because Units 6 & 7 are relatively close to one another and because of the distance covered by these profiles, the locus of these radial lines is the center point between the Units 6 & 7 power block buildings.

The Turkey Point plant property lies on the lower east coast of Florida within the Atlantic Coastal Ridge, which is generally a flat stretch of land that borders the Atlantic Ocean. The terrain within 50 miles is generally flat with elevations decreasing to the west through the south as the Florida Everglades and adjacent bay waters are reached. Terrain elevations tend to increase to the west-northwest through the north-northeast from the plant area with maximum relief of up to approximately 60 feet relative to the finished plant grade. Figure 2.7-1 indicates that the highest elevation within 50 miles is 86.12 feet above MSL (this spot elevation does not fall along one of the 16 standard direction radials presented in Figure 2.7-14). Figure 2.7-1 also indicates that the lowest elevation within 50 miles, 2.49 feet below MSL, is to the northeast of the Turkey Point plant property.

More detailed topographic features within 5 miles of Units 6 & 7, also based on digital map elevations, are shown in Figure 2.7-15. Terrain within this radial distance primarily consists of flat plains with very little elevation change relative to nominal plant grade.

While there would be clearing, grubbing, excavation, leveling, and landscaping activities associated with the construction of Units 6 & 7 (see Section 3.9), these alterations to the existing terrain would be localized and would not represent a significant change to the flat to gently rolling topographic character of the vicinity or the surrounding area. Neither the mean and extreme climatological characteristics of the area nor the meteorological characteristics of the Turkey Point plant property and vicinity would be affected as a result of plant construction.

The dimensions and operating characteristics of the facilities associated with Units 6 & 7, including paved, concrete, or other improved surfaces, are insufficient to generate discernible, long-term effects to local- or microscale meteorological conditions, or to the mean and extreme climatological characteristics of the area addressed previously in Subsection 2.7.4.1.

Wind flow would be altered in areas immediately adjacent to and downwind of larger structures. However, these effects would likely dissipate within ten structure heights downwind of the intervening structure(s). Similarly, while ambient temperatures immediately above any improved surfaces could increase, these temperature effects will be too limited in their vertical profile and horizontal extent to alter local-, area-, or regional-scale mean or extreme ambient temperature patterns.

Units 6 & 7 would use mechanical draft cooling towers as a means of heat dissipation during normal operation. Potential meteorological effects as a result of the cooling towers could include localized enhanced ground-level fogging, cloud shadowing and precipitation enhancement, and increased ground-level humidity. These localized effects are addressed in Subsections 5.3.3.1 and 5.3.3.2.

2.7.5 SHORT-TERM DIFFUSION ESTIMATES

2.7.5.1 Regulatory Basis and Technical Approach

To evaluate potential health effects of postulated design basis accidents at Units 6 & 7, the NRC-sponsored PAVAN computer code (NUREG/CR-2858) was used to estimate relative ground-level atmospheric concentrations (X/Q) at the exclusion area boundary (EAB) and low population zone (LPZ) for postulated accidental releases of radioactive material. According to Subsection B of RG 1.23, the recommended meteorological data for a combined license which does not reference an early site permit is a consecutive 24-month period of data that is defendable, representative, and complete, but not older than 10 years from the date of application.

The 2002, 2005, and 2006 period of data taken was determined to be the best available (using validated data with least data substitution), representative (tower and sensor siting in accordance with RG 1.23, Revision 1), and complete (with annualized composite data recovery of 90 percent), without being older than 10 years. Because RG 1.23, Revision 1 specifies that more years of data is preferable, three years (i.e., 2002, 2005, and 2006) of data was used in characterizing the atmospheric conditions for Units 6 & 7.

According to 10 CFR Part 100, it is necessary to consider the doses for various time periods immediately following the onset of a postulated ground-level release at the EAB and for the duration of the exposure for the LPZ and the population center distances. Therefore, the relative atmospheric dispersion factors (X/Qs) are estimated for various time periods ranging from 2 hours to 30 days.

Meteorological data was used to determine various postulated accident conditions as recommended in RG 1.145. Compared to an elevated release, a ground-level release usually results in higher ground-level concentrations at downwind receptors as a result of less dispersion and shorter traveling distances. The ground-level release scenario provides a bounding case, and none of the release heights are higher than 2.5 times the height of the nearby reactor building, elevated releases were not considered.

The PAVAN program implements the guidance provided in RG 1.145. Primarily, the code computes X/Q values at the EAB and LPZ for each combination of wind speed and atmospheric stability class for each of 16 downwind direction sectors (i.e., north, north-northeast, northeast, etc.). The X/Q values calculated for each direction sector are then ranked in descending order, and an associated cumulative frequency distribution is derived based on the frequency distribution of wind speeds and stabilities for the complementary upwind direction sector. The X/Q value that is equaled or exceeded 0.5 percent of the total time becomes the maximum sector-dependent X/Q value.

The calculated X/Q values were also ranked independently of wind direction to develop a cumulative frequency distribution for the entire site. The PAVAN program then selects the X/Qs that equaled or exceeded 5 percent of the total time.

The larger of the two values (i.e., the maximum sector-dependent 0.5 percent X/Q or the overall site 5 percent X/Q value) is used to represent the X/Q value for a 0–2 hour time period. To determine X/Qs for longer time periods, the program calculates an annual average X/Q value using the procedure described in RG 1.111. The program then uses logarithmic interpolation between the 0–2 hour X/Qs for each sector and the corresponding annual average X/Q to calculate the values for intermediate time periods (i.e., 0–8 hours, 8–24 hours, 1–4 days, and 4 – 30 days). As suggested in NUREG/CR-2858, each of the sector-specific 0–2 hour X/Q values provided in the PAVAN output file were examined for “reasonability” by comparing them with the ordered X/Q values presented in the model output.

The PAVAN model was configured to calculate offsite X/Q values assuming both “wake credit allowed” and “wake credit not allowed”. Several sector distances from the power block area (PBA) to the EAB (NE, ENE, E, SE, and ESE) are within the building wake influence zone. No building wake credit was taken for EAB receptors within the building wake influence zone to ensure conservative results. Also, because the LPZ is farther away from the units than the EAB, the “wake-credit not allowed” scenario of the PAVAN results was used for the X/Q analyses at both the EAB and the LPZ.

The following input data and assumptions were used in the PAVAN modeling analysis:

- Meteorological data: 3-year (2002, 2005, and 2006) onsite joint frequency distributions of wind speed, wind direction, and atmospheric stability
- Wind sensor height: 10 meters (33 feet)
- Vertical temperature difference: (10 meters–60 meters)

- Number of wind speed categories in joint frequency distributions: 13
- Minimum reactor building cross-sectional area: 2636 square meters
- Type of release: Ground-level (model-designated)
- Distances from release point to EAB for all downwind sectors
- Distances from release point to LPZ for all downwind sectors

The PAVAN model uses building cross-sectional area and containment height to estimate wake-related X/Q values. If the EAB and the LPZ are both located beyond the building wake influence zone, these two input parameters have no effect in calculating the non-wake X/Q values.

The joint frequency distribution (JFD) input to the PAVAN dispersion modeling analysis are presented in Table 2.7-10 (see also Subsection 2.7.4.4 for additional information). There were no hours of calm wind conditions at the 10-meter measurement level during the period of record.

2.7.5.2 PAVAN Modeling Results

For modeling convenience, Units 6 & 7 were conservatively treated as one unit in estimating the shortest distance to each boundary receptor in each direction. This was done by using a source boundary which encloses both Units 6 & 7. Using the source boundary approach, the shortest distance from the source boundary to the EAB is presented in Table 2.7-12 for each of the 16 direction sectors.

The maximum direction-dependent 0.5 percent X/Q value and the overall 5 percent X/Q value were conservatively estimated using the source boundary concept. Similarly, the shortest distances from the source boundary to the LPZ were used in the PAVAN modeling run to determine the X/Q values at the LPZ.

Based on the PAVAN modeling results, the maximum 0-2 hour, 0.5 percent, direction-dependent X/Q value was compared with 5 percent overall site 0-2 hour X/Q value at the EAB. The higher of the two was used as the proper X/Q at the EAB for each time period. The same approach was used to determine the proper X/Qs at the LPZ.

Tables 2.7-13 (EAB without and with wake credit) and 2.7-14 (LPZ with no wake credit) present the X/Qs for each of the 16 downwind sectors for the appropriate time period(s). The overall site 5 percent X/Q (s/m^3) value at either the EAB (with or without wake credit for select sectors) or the

LPZ is higher than the sector-dependent 0.5 percent X/Q (s/m^3) value. These values are summarized below.

Receptor Location	X/Q 0–2 hours	X/Q 0–8 hours	X/Q 8–24 hours	X/Q 1–4 days	X/Q 4–30 days	X/Q Annual Average
EAB	4.19E-04	+	+	+	+	+
DCD Value	5.1E-04	Not provided	Not provided	Not provided	Not provided	Not provided
LPZ	+	1.87E-5	1.25E-5	5.25E-6	1.51E-6	+
DCD Value	Not provided	2.2E-04	1.6E-04	1.0E-04	8.0E-05	Not provided

Table Notes: + The value is not provided because there is no equivalent DCD value.

As required in Section 7.1, below are the 50 percent X/Q values at the EAB and LPZ:

Receptor Location	X/Q 0–2 hours	X/Q 0–8 hours	X/Q 8–24 hours	X/Q 1–4 days	X/Q 4–30 days	X/Q Annual Average
EAB	1.89E-04	1.38E-04	1.18E-04	8.40E-05	5.15E-05	2.83E-05
LPZ	9.18E-06	5.29E-06	4.02E-06	2.21E-06	9.39E-07	3.29E-07

2.7.6 LONG-TERM (ROUTINE) DIFFUSION ESTIMATES

2.7.6.1 Regulatory Basis and Technical Approach

This subsection provides estimates of annual average atmospheric dispersion factors (X/Q values) and relative dry deposition factors (D/Q values) to a distance of 50 miles (80 kilometers) for annual average release limit calculations and person-rem estimates.

The NRC-sponsored XOQDOQ computer program (NUREG/CR-2919) was used to estimate X/Q and D/Q values from routine releases of gaseous effluents to the atmosphere. The XOQDOQ computer code has the primary function of calculating annual average X/Q and D/Q values at receptors of interest (e.g., EAB, nearest milk animal, nearest resident, nearest vegetable garden, and nearest meat animal).

The XOQDOQ dispersion model implements the assumptions outlined in RG 1.111. The program assumes that the material released to the atmosphere follows a Gaussian distribution around the plume centerline. In estimating concentrations for longer time periods, the Gaussian distribution is assumed to be evenly distributed within a given directional sector. A straight-line trajectory is assumed between the release point and all receptors.

Since the NRC-sponsored XOQDOQ model was used in the analysis, diffusion parameters (σ_y and σ_z) as specified in RG 1.145 and implemented by the XOQDOQ code were used in estimating the X/Q and D/Q values. The following input data and assumptions was used in the XOQDOQ modeling analysis:

- Meteorological data: 3-year (2002, 2005, and 2006) onsite joint frequency distributions of wind speed, wind direction, and atmospheric stability (see Table 2.7-5)
- Type of release: Ground-level
- Wind sensor height: 10 meters
- Vertical temperature difference: (10 meters–60 meters)
- Number of wind speed categories: 13
- Release height: 10 meters
- Minimum Shield Building cross-sectional area: 2636 square meters
- Shield Building height: 69.7 meters above grade
- Distances from the release point to the nearest residence, EAB, vegetable garden, milk animal, and meat animal

No residential milk cows have been identified within 5 miles of the Turkey Point plant property, and no dairies have been identified within 50 miles. It was conservatively assumed that all residents have a vegetable garden and are raising beef cattle for residential consumption.

The AP1000 standard plant design was used to calculate the minimum building cross-sectional area as called for in NUREG/CR-2919 for evaluating building downwash effects on dispersion. Therefore, based on the width (43.3 meters) and height above grade (60.9 meters – normalized for building taper) of the shield building, the cross-sectional area (normalized to a rectangle) of the shield structure was calculated to be 2636 square meters.

Distances from Units 6 & 7 to various receptors of interest (i.e., nearest residence, meat animal, EAB, and vegetable garden) are presented in Table 2.7-15.

As described in Subsection 2.7.5, site-specific meteorological data covering the 3-year period of record (2002, 2005, and 2006) was used to quantitatively evaluate diffusion estimates. Therefore, the lower level (10 meters) joint frequency distributions of wind speed, wind direction, and atmospheric stability (based on 60 meter and 10 meter data) were used as input in the XOQDOQ modeling analysis.

2.7.6.2 XOQDOQ Modeling Results

Table 2.7-16 summarizes the maximum relative concentration and relative deposition (i.e., X/Q and D/Q) values predicted by the XOQDOQ model for identified sensitive receptors of interest in the area as a result of routine releases of gaseous effluents. The listed maximum X/Q values reflect several plume depletion scenarios that account for radioactive decay: no decay and the default half-life decay periods of 2.26 and 8 days.

The overall maximum annual average X/Q value with no decay is 1.70E-05 seconds/cubic meter and occurs at the EAB along the south-southeast, southeast, and west sectors as a result of releases from the PBA. The maximum annual average X/Q values (along with the direction and distance of the receptor locations relative to Units 6 & 7) for the other sensitive receptor types are:

- 1.4E-07 seconds/cubic meter for the nearest resident occurring in the north sector at a distance of 2.7 miles
- 9.6E-08 seconds/cubic meter for the nearest vegetable garden occurring in the northwest sector at a distance of 4.8 miles

Tables 2.7-17 and 2.7-18 summarize the annual average X/Q values (for no decay) and D/Q values, respectively, for the 22 standard radial distances between 0.25 miles and 50 miles, and for the 10 distance-segment boundaries between 0.5 miles and 50 miles downwind along each of the 16 standard direction radials separated by 22.5 degrees. Table 2.7-19 summarizes X/Q values and D/Q values for the receptors of interest.

2.7.7 NOISE

An ambient noise monitoring survey was performed in June 2008 to assess the existing ambient noise in areas adjacent to the Turkey Point units. The purpose of the noise survey was to determine baseline noise impacts at and around the Units 6 & 7 plant area, at the Turkey Point plant property boundary, and offsite receptors. The location of the noise monitoring sites is shown in Figure 2.7-16. The receptors of primary concern are the nearest residences to the northwest, the day care facility to the west, and Homestead Bayfront Park to the north.

The field effort to collect the baseline noise level data was conducted on June 3 and 4, 2008, during the daytime and nighttime. The survey consisted of measuring the background noise levels at eight locations both onsite and offsite spanning a 2-day period.

Six of the eight monitoring locations (monitoring sites S1, S4, S5, S6, S7, and S8) were selected to delineate the existing noise levels produced by the existing units as well as other noise sources at the Turkey Point plant property boundary and at the nearest public receptors. Additionally, monitoring sites S2 and S3 were selected to delineate the existing onsite noise levels produced solely by the existing units and were located on the transmission line to the northwest of Unit 5. Monitoring sites S4 and S5 were located approximately 1.6 miles northwest and 2 miles north, respectively, from the existing units. These monitoring sites were chosen to delineate the noise levels at or near the plant property boundaries, and are the closest public access to Turkey Point. Monitoring sites S6, S7, and S8 were located at the day-care facility to the west, at the Homestead Bayfront Park entrance, and at the nearest residence, respectively. Monitoring site S1 was located at the southeast corner of the Homestead Miami Speedway. Background measurements for Units 6 & 7 were collected while Units 1, 2, 3, 4, and 5 were operating at base load.

The baseline daytime sound pressure level (noise level equivalent [Leq]) measurements for the monitoring locations within and near the Turkey Point plant property boundary (monitoring sites S2, S3, S4, and S5) ranged from a low of 44 dBA at site S5 to a high of 68 dBA at site S3. The nighttime Leq measurements ranged from a low of 47 dBA at site S5 to a high of 67 dBA at site S3. These monitoring sites are closest to Unit 5, which had an audible contribution. Also contributing to the observed sound levels were transient noise sources such as traffic, birds, insects, and wind.

The baseline daytime Leq measurements for the monitoring locations beyond the plant property boundary (monitoring sites S1, S6, S7, and S8) ranged from a low of 46 dBA at site S7 to a high of 67 dBA at site S8. The contributing audible noise sources to the highest observed noise levels at site S8, the nearest residence, were transient noises that included traffic, birds, insects, and wind. The nighttime Leq measurements beyond the plant property boundary ranged from a low of 41 dBA at site S7 to a high of 56 dBA at site S1. The contributing audible noise sources to the highest observed noise levels at site S1 were transient noises that included insects, wind noise, and traffic.

Section 2.7 References

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Table 2.7-1
NWS and Cooperative Observing Stations Near Units 6 & 7

Station	County	Approximate Distance (miles)	Direction Relative to Units 6 & 7 Plant Area	Elevation (feet)
Dania 4 WNW	Broward	46	NNE	10
Flamingo Ranger Station	Monroe	41	SW	3
Fort Lauderdale	Broward	47	NNE	16
Fort Lauderdale Exp Station	Broward	46	N	10
Hialeah	Miami-Dade	27	N	12
Homestead Exp Station	Miami-Dade	12	NW	11
Kendall 2 E	Miami-Dade	18	NNE	20
Miami Beach	Miami-Dade	28	NE	5
Miami 12 SSW[(a)]	Miami-Dade	16	NNE	10
Miami 12 SSW[(b)]	Miami-Dade	16	NNE	10
Miami International Airport[(c)]	Miami-Dade	25	N	29
Oasis Ranger Station	Collier	53	NW	8
Perrine 4 W	Miami-Dade	13	NNW	10
Pompano Beach	Broward	57	NNE	15
Royal Palm Ranger Station	Miami-Dade	17	WSW	7
Tamiami Trail 40-Mile Bend	Miami-Dade	38	NW	15
Tavernier	Monroe	31	SSW	7

(a) Period of record 1933–1958
(b) Period of record 1958–1988
(c) National Weather Service First-Order-Station

Table 2.7-2
2008 Local Climatological Data Summary for Miami International Airport

NORMALS, MEANS, AND EXTREMES
MIAMI (KMIA)

LATITUDE: 25 ° 49'N LONGITUDE: -80 ° 17'W ELEVATION (FT): GRND: 6 BARO: 29 TIME ZONE: EASTERN (UTC -5) WBAN: 12839

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	76.5	77.7	80.7	83.8	87.2	89.5	90.9	90.6	89.0	85.4	81.2	77.5	84.2
	MEAN DAILY MAXIMUM	61	75.7	77.1	79.8	82.7	85.9	88.1	89.6	89.9	88.3	85.0	80.5	77.0	83.3
	HIGHEST DAILY MAXIMUM	66	88	89	93	96	96	98	98	98	97	95	91	87	98
	YEAR OF OCCURRENCE		1987	2008	2003	1971	2008	1985	1998	1990	1987	1980	2002	1989	JUL 1998
	MEAN OF EXTREME MAXS.	61	83.5	85.3	87.7	90.0	91.3	92.8	93.4	93.8	92.3	89.8	86.0	83.7	89.1
	NORMAL DAILY MINIMUM	30	59.6	60.5	64.0	67.6	72.0	75.2	76.5	76.5	75.7	72.2	67.5	62.2	69.1
	MEAN DAILY MINIMUM	61	59.7	61.1	64.4	68.0	72.0	74.9	76.5	76.6	75.9	72.4	66.6	61.9	69.2
	LOWEST DAILY MINIMUM	66	30	32	32	46	53	60	69	68	68	51	39	30	30
	YEAR OF OCCURRENCE		1985	1947	1980	1971	1945	1984	2002	1950	1983	1943	1950	1989	DEC 1989
	MEAN OF EXTREME MINS.	61	42.4	45.8	49.3	56.7	64.2	70.0	72.1	72.3	71.9	63.0	52.6	45.5	58.8
	NORMAL DRY BULB	30	68.1	69.1	72.4	75.7	79.6	82.4	83.7	83.6	82.4	78.8	74.4	69.9	76.7
	MEAN DRY BULB	61	67.7	69.1	72.2	75.4	79.0	81.6	83.0	83.3	82.1	78.7	73.6	69.5	76.3
	MEAN WET BULB	25	62.0	63.3	64.8	66.7	71.1	75.0	76.0	76.4	75.8	72.3	67.9	64.1	69.6
	MEAN DEW POINT	25	59.1	60.3	61.7	63.4	68.3	73.0	73.9	74.4	74.0	70.1	65.5	61.2	67.1
	NORMAL NO. DAYS WITH:														
	MAXIMUM >= 90	30	0.0	0.0	0.3	1.7	4.8	10.8	18.0	16.9	10.8	2.6	0.0	0.0	65.9
	MAXIMUM <= 32	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MINIMUM <= 32	30	0.1	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
	MINIMUM <= 0	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H/C	NORMAL HEATING DEG. DAYS	30	52	39	15	1	0	0	0	0	0	0	4	38	149
	NORMAL COOLING DEG. DAYS	30	133	154	236	315	442	510	568	568	517	433	291	194	4361
RH	NORMAL (PERCENT)	30	73	71	70	67	71	76	74	76	78	75	74	73	73
	HOUR 01 LST	30	81	80	78	76	79	83	82	83	84	82	81	80	81
	HOUR 07 LST	30	85	84	82	79	80	83	83	85	87	85	84	84	83
	HOUR 13 LST	30	59	57	56	54	58	65	63	65	66	63	63	60	61
	HOUR 19 LST	30	70	68	66	64	69	74	72	75	77	73	72	71	71
S	PERCENT POSSIBLE SUNSHINE	20	66	68	74	76	72	68	72	71	70	70	67	63	70
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	45	0.9	0.6	0.5	0.4	0.2	0.2	0.1	0.1	0.2	0.3	0.5	0.7	4.7
	THUNDERSTORMS	61	0.9	1.1	1.8	2.8	6.3	12.5	14.6	15.4	11.4	4.3	1.0	0.6	72.7
CLOUDNESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)	48	4.3	4.2	4.3	4.2	4.6	5.4	5.1	5.1	5.3	4.6	4.3	4.2	4.6
	MIDNIGHT-MIDNIGHT (OKTAS)	32	3.8	3.8	3.8	3.5	4.1	4.9	4.4	4.4	4.7	4.0	3.8	3.6	4.1
	MEAN NO. DAYS WITH:														
	CLEAR	47	9.2	8.6	8.5	8.4	6.3	3.1	2.6	2.5	2.1	6.6	7.5	8.9	74.3
	PARTLY CLOUDY	47	13.1	12.1	14.1	14.9	15.3	14.3	17.4	17.8	15.5	14.3	14.0	12.9	175.7
	CLOUDY	47	8.7	7.6	8.3	6.7	9.3	12.6	11.0	10.7	12.4	10.1	8.5	9.1	115.0
PR	MEAN STATION PRESSURE(IN)	25	30.10	30.07	30.04	30.00	29.98	30.00	30.04	29.99	29.94	29.96	30.03	30.08	30.02
	MEAN SEA-LEVEL PRES. (IN)	25	30.12	30.09	30.06	30.02	30.00	30.02	30.06	30.01	29.96	29.98	30.05	30.10	30.04
WINDS	MEAN SPEED (MPH)	25	8.9	9.2	10.1	9.8	9.1	7.8	7.6	7.4	7.8	8.9	9.3	8.6	8.7
	PREVAIL.DIR(TENS OF DEGS)	40	35	12	12	11	09	12	12	11	11	06	10	35	12
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	12	30	55	43	37	43	41	41	60	43	69	36	29	69
	DIR. (TENS OF DEGS)		09	19	26	16	10	14	10	13	10	15	18	22	15
	YEAR OF OCCURRENCE		1998	1998	2003	2008	1999	2007	2005	2005	1998	2005	1998	1997	OCT 2005
	MAXIMUM 3-SECOND														
	SPEED (MPH)	12	40	104	51	52	63	53	55	78	51	92	44	40	104
	DIR. (TENS OF DEGS)		26	19	26	15	33	14	04	12	28	15	31	23	19
	YEAR OF OCCURRENCE		2004	1998	2003	2008	1998	2007	2008	2005	2004	2005	1998	1997	FEB 1998
PRECIPITATION	NORMAL (IN)	30	1.88	2.07	2.56	3.36	5.52	8.54	5.79	8.63	8.38	6.19	3.43	2.18	58.53
	MAXIMUM MONTHLY (IN)	66	6.66	8.07	10.57	17.29	18.54	22.36	13.51	16.88	24.40	21.64	13.84	6.39	24.40
	YEAR OF OCCURRENCE		1969	1983	1986	1979	1968	1968	1947	1943	1960	1991	1992	1958	SEP 1960
	MINIMUM MONTHLY (IN)	66	0.04	0.01	0.02	0.05	0.44	1.81	1.77	1.65	2.63	0.72	0.09	0.12	0.01
	YEAR OF OCCURRENCE		1951	1944	1956	1981	1965	1945	1963	1954	1951	2002	1970	1988	FEB 1944
	MAXIMUM IN 24 HOURS (IN)	66	2.68	5.73	7.07	16.21	11.59	8.20	4.67	6.92	7.58	12.66	8.01	5.26	16.21
	YEAR OF OCCURRENCE		1973	1966	1949	1979	1977	1977	2003	1964	1960	2000	1992	2000	APR 1979
	NORMAL NO. DAYS WITH:														
	PRECIPITATION >= 0.01	30	7.5	6.8	6.2	6.1	10.3	15.6	16.0	18.9	17.4	13.4	9.0	7.3	134.5
	PRECIPITATION >= 1.00	30	0.4	0.5	0.8	0.9	1.4	2.7	1.6	2.5	2.7	1.7	0.9	0.5	16.6
SNOWFALL	NORMAL (IN)	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MAXIMUM MONTHLY (IN)	5	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T
	YEAR OF OCCURRENCE						1998								MAY 1998
	MAXIMUM IN 24 HOURS (IN)	59	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T
	YEAR OF OCCURRENCE'						1998								MAY 1998
	MAXIMUM SNOW DEPTH (IN)	53	0	0	0	0	0	0	0	0	0	0	0	0	0
	YEAR OF OCCURRENCE														
	NORMAL NO. DAYS WITH:														
	SNOWFALL >= 1.0	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

published by: NCDC Asheville, NC 3 30 year Normals (1971-2000)

Source: NCDC Feb 2009a

Table 2.7-3
Climatological Normals at Selected NWS and Cooperative Observing Stations in Units 6 & 7 Area

Station	Normal Annual Temperatures (°F)				Normal Annual Precipitation	
	Mean Monthly Maximum	Mean Monthly Minimum	Mean Monthly Range	Mean Monthly Mean	Rainfall (inches)	Snowfall (inches)
Dania 4 WNW	NA	NA	NA	NA	54.7[b]	0.0[b]
Flamingo Ranger Station	84.3[a]	66.1[a]	18.2	75.2[a]	47.5[a]	0.0[b]
Fort Lauderdale	83.4[a]	68.3[a]	15.1	75.9[a]	64.2[a]	0.0[b]
Fort Lauderdale Experiment Station	83.5[b]	64.1[b]	19.4	73.8[b]	60.9[b]	0.0[b]
Hialeah	85.3[a]	71.4[a]	13.9	78.4[a]	66.0[a]	0.0[b]
Homestead Experiment Station	84.1[c]	65.5[c]	18.6	74.8[c]	58.2[c]	0.0[b]
Kendall 2 E	NA	NA	NA	NA	61.6[b]	0.0[b]
Miami Beach	80.3[a]	71.3[a]	9.0	75.9[a]	46.6[a]	0.0[b]
Miami 12 SSW (POR 1931–1958)	83.4[b]	66.3[b]	17.1	74.9[d]	55.8[b]	0.0[b]
Miami 12 SSW (POR 1958–1988)	82.9[b]	66.3[b]	16.6	74.6[d]	57.2[b]	0.0[b]
Miami International Airport	84.2[a]	69.1[a]	15.1	76.7[a]	58.5[a]	0.0[b]
Oasis Ranger Station	85.7[b]	65.9[b]	19.8	75.8[d]	58.8[c]	0.0[b]
Perrine 4 W	83.2[b]	64.9[b]	18.5	74.1[d]	61.6[c]	0.0[b]
Pompano Beach	84.5[a]	67.5[a]	17.0	76.0[a]	57.3[a]	0.0[b]
Royal Palm Ranger Station	84.9[a]	65.3[a]	19.6	75.1[a]	55.6[a]	0.0[b]
Tamiami Trail 40 Mile Bend	85.6[a]	66.0[a]	19.6	75.8[a]	51.6[a]	0.0[b]
Tavernier	82.4[a]	71.0[a]	11.4	76.7[a]	44.8[a]	0.0[b]

(a) NCDC July 2005
(b) SERCC Jun 2008a and SERCC Jun 2008b
(c) NCDC Feb 2002a
(d) Value calculated as the mean of Mean Annual Maximum and Mean Annual Minimum
NA — Not Available

Table 2.7-4
Climatological Extremes at Selected NWS and Cooperative Observing Stations in Units 6 & 7 Area

Station	Maximum Temperature (°F)	Minimum Temperature (°F)	Maximum 24-Hr Rainfall (inches)	Maximum Monthly Rainfall (inches)	Maximum 24-Hr Snowfall (inches)	Maximum Monthly Snowfall (inches)
Dania 4 WNW	96[(a), (b)] (10/03/1965)	42[(a), (b)] (11/19/1951)	9.5[(a), (b)] (10/30/1969)	22.0[(a), (b)] (09/1960)	0.0[(a), (b)]	0.0[(a), (b)]
Flamingo Ranger Station	104[(c)] (06/24/1998)	25[(c)] (12/25/1989)	8.2[(c)] (08/18/1981)	24.7[(a)] (05/1975)	0.0[(c)]	0.0[(c)]
Fort Lauderdale	99[(c)] (07/13/1980)	28[(c)] (01/20/1977)	14.6[(c)] (04/25/1979)	24.4[(c)] (06/1992)	0.0[(c)]	0.0[(c)]
Fort Lauderdale Experiment Station	100[(a), (b)] (06/24/1977)	26[(a,b)] (01/20/1977)	11.5[(a), (b)] (04/25/1979)	21.3[(a), (b)] (06/1966)	0.0[(a), (b)]	0.0[(a), (b)]
Hialeah	100[(c)] (07/10/1998)	28[(c)] (01/13/1981)	10.0[(c)] (05/05/1977)	31.9[(c)] (06/1999)	0.0[(c)]	0.0[(c)]
Homestead Experiment Station	100[(a), (b), (d)] (06/24/1944)	26[(a), (b), (e)] (02/16/1943)	11.5[(a), (b)] (10/05/1933)	27.3[(a), (b)] (08/1981)	T[(a), (b)] (01/19/1977)	T[(a), (b)] (01/1977)
Kendall 2 E	NA	NA	9.8[(a), (b)] (05/25/1958)	23.2[(a), (b)] (08/1973)	0.0[(a), (b)]	0.0[(a), (b)]
Miami Beach	98[(c)] (08/29/1999)	32[(c)] (12/24/1989)	8.4[(c)] (09/23/1960)	17.5[(c)] (05/1984)	0.0[(c)]	0.0[(c)]
Miami 12 SSW (POR 1931–1958)	98[(a), (b), (f)] (06/18/1934)	28[(a), (b), (g)] (02/06/1947)	7.6[(a), (b)] (09/22/1948)	23.8[(a), (b)] (09/1948)	0.0[(a), (b)]	0.0[(a), (b)]
Miami 12 SSW (POR 1958–1988)	97[(a), (b), (h)] (08/10/1987)	25[(a), (b)] (01/20/1977)	10.1[(a), (b)] (09/10/1960)	27.5[(a), (b)] (09/1960)	0.0[(a), (b)]	0.0[(a), (b)]
Miami International Airport	98[(k,l)] (07/03/1998)	30[(k,m)] (12/25/1989)	14.9[(k)] (04/25/1979)	24.4[(k)] (09/1960)	0.0[(c)]	0.0[(c)]
Oasis Ranger Station	103[(a), (b)] (06/18/1981)	26[(a,b,n)] (02/16/1991)	8.1[(a), (b)] (08/24/1995)	24.2[(a), (b)] (06/1999)	0.0[(a), (b)]	0.0[(a), (b)]
Perrine 4 W	98[(a), (b)] (07/04/1998)	29[(a), (b)] (12/24/1989)	15.1[(a), (b)] (08/26/2005)	29.5[(a), (b)] (09/1960)	0.0[(a), (b)]	0.0[(a), (b)]
Pompano Beach	101[(a)] (07/16/1981)	21[(a)] (02/09/1995)	12.7[(a)] (10/15/1965)	34.4[(a), (b)] (10/1965)	0.0[(a)]	0.0[(a)]
Royal Palm Ranger Station	102[(a,o)] (04/28/2007)	24[(a)] (01/20/1977)	9.6[(a)] (06/09/1997)	25.5[(a), (b)] (06/1969)	0.0[(a)]	0.0[(a)]
Tamiami Trail 40 Mile Bend	102[(a)] (06/17/1981)	28[(a,p)] (12/25/1989)	7.5[(a,q)] (10/16/1999)	23.5[(a), (b)] (06/1969)	0.0[(a)]	0.0[(a)]
Tavernier	98[(a,r)] (09/03/2003)	35[(a,s)] (12/24/1989)	13.8[(a)] (06/02/1982)	21.8[(a), (b)] (06/1967)	0.0[(a)]	0.0[(a)]

(a) Reference: USU 2008.
(b) Reference: SERCC Jun 2008a.
(c) Reference: NCDC 2004.
(d) Occurs on multiple dates: 07/21/1942; 06/24/1944 (most recent date shown in table).
(e) Occurs on multiple dates: 12/13/1934; 03/02/1941; 02/16/43 (most recent date shown in table).
(f) Occurs on multiple dates: 07/09/1932; 06/18/1934 (most recent date shown in table).
(g) Occurs on multiple dates: 01/28/1940; 02/06/1947 (most recent date shown in table).
(h) Occurs on multiple dates: 05/01/1971; 06/25/1987 (most recent date shown in table).

(i) Occurs on multiple dates: 08/06/1954; 07/19/1981; 06/04/1985 (most recent date shown in table).
(j) Occurs on multiple dates: 01/22/1985; 12/25/1989 (most recent date shown in table).
(k) Reference: NCDC Feb 2009a.
(l) Occurs on multiple dates: 06/04/1985; 07/03/1998; 08/01/1990 (most recent date shown in table).
(m) Occurs on multiple dates: 01/22/1985; 12/25/1989 (most recent date shown in table).
(n) Occurs on multiple dates: 01/12/1989; 12/25/1989; 02/16/1991 (most recent date shown in table).
(o) Occurs on multiple dates: 07/22/1996; 04/28/1907 (most recent date shown in table).
(p) Occurs on multiple dates: 01/22/1985; 12/25/1989 (most recent date shown in table).
(q) Occurs on multiple dates: 09/23/1948; 10/16/1999 (most recent date shown in table).
(r) Occurs on multiple dates: 08/14/1957; 09/03/1963 (most recent date shown in table).
(s) Occurs on multiple dates: 01/13/1981;12/24/1989 (most recent date shown in table).
NA — Not Available. This parameter is not measured at this station.

Table 2.7-5
Monthly, Seasonal, and Annual Morning and Afternoon Mixing Heights and Wind Speed for Units 6 & 7

Period	Statistic[a]	Mixing Height (m, AGL)[b]		Wind Speed — (m/sec)	
		AM	PM	AM	PM
January	Min	252	858	2.7	2.4
	Max	863	1400	4.7	4.5
	Mean	522	1105	3.5	3.2
February	Min	359	910	2.5	2.2
	Max	1012	1458	4.6	4.4
	Mean	599	1239	3.5	3.3
March	Min	406	1,043	2.8	2.6
	Max	1010	1552	4.8	4.6
	Mean	681	1311	3.5	3.3
April	Min	272	1128	2.5	2.2
	Max	1056	1689	4.4	4.0
	Mean	668	1412	3.3	3.1
May	Min	327	881	2.1	2.2
	Max	1224	1618	4.6	4.3
	Mean	688	1338	3.1	2.9
June	Min	327	725	1.8	2.2
	Max	928	1464	4.1	4.3
	Mean	577	1165	3.1	2.9
July	Min	240	806	1.8	1.9
	Max	788	1547	4.6	4.0
	Mean	474	1234	2.8	2.7
August	Min	254	958	2.1	2.1
	Max	774	1489	4.4	4.0
	Mean	478	1237	2.3	2.8
September	Min	234	868	2.5	2.2
	Max	952	1430	4.8	5.0
	Mean	541	1139	3.4	3.2
October	Min	376	868	2.4	2.7
	Max	1076	1556	4.6	4.6
	Mean	607	1184	3.6	3.6
November	Min	343	768	2.5	2.7
	Max	981	1406	5.0	4.7
	Mean	606	1138	3.6	3.4
December	Min	292	886	2.2	2.3
	Max	970	1486	4.7	5.1
	Mean	569	1128	3.4	3.4
Winter	Mean	563	1157	3.5	3.3
Spring	Mean	679	1354	3.3	3.1
Summer	Mean	510	1212	2.7	2.7
Fall	Mean	585	1154	3.5	3.4
Annual	Mean	584	1219	3.5	3.1

(a) Monthly minimum, maximum, and mean values are based directly on summaries available from USDA—Forest Service Ventilation Climate Information System. Seasonal and annual mean values represent weighted averages based on the number of days in the appropriate months.
(b) AGL = above ground level
Source: USDA 2007

Table 2.7-6
Seasonal and Annual Mean Wind Speeds for Turkey Point (2002, 2005, and 2006) and the Miami International Airport NWS Station (1971–2000, Normals)

Primary Tower Elevation	Location	Winter	Spring	Summer	Fall	Annual
Upper Level (60 meters) (m/sec)	Turkey Point Plant Property	6.1	5.9	4.8	5.5	5.6
Lower Level (10 meters) (m/sec)	Turkey Point Plant Property	3.7	4.0	3.5	3.7	3.8
Single Level (10 meters) (m/sec)	Miami International Airport[(a)NCDC 2009b]	4.0	4.3	3.4	3.9	3.9

(a) Source: NCDC Feb 2009a

Winter = December, January, February
Spring = March, April, May
Summer = June, July, August
Fall = September, October, November

**Table 2.7-7 (Sheet 1 of 3)
Wind Direction Persistence/Wind Speed Distributions for the
Turkey Point Plant Property 10-Meter Level**

Site Name: Turkey Point Units 6 & 7	
Start Date: 01/01/2002 00:00	End Date: 12/31/2002 23:00
Start Date: 01/01/2005 00:00	End Date: 12/31/2005 23:00
Start Date: 01/01/2006 00:00	End Date: 12/31/2006 23:00
Number of Sectors Included:	1 Width in Degrees 22.5
10-Meter Wind Speed (mph)	10-Meter Wind Direction (degrees)
Number of valid speed and direction observations: 25,407	

Speed Greater than or Equal to: 5.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	997	395	1465	2359	3979	3009	1836	1323	960	587	397	313	300	306	539	1554
2	527	144	1004	1553	2870	2007	1205	806	554	303	191	135	136	136	251	1008
4	170	27	593	852	1710	1034	642	350	230	104	71	40	42	46	73	519
8	23	0	268	345	722	324	265	72	49	9	11	4	7	6	6	177
12	6	0	129	178	294	101	137	7	13	0	0	0	1	1	0	62
18	0	0	47	79	71	6	44	0	1	0	0	0	0	0	0	20
24	0	0	15	51	17	0	19	0	0	0	0	0	0	0	0	8
30	0	0	3	29	6	0	10	0	0	0	0	0	0	0	0	0
36	0	0	0	15	0	0	4	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 10.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	202	157	889	1114	1771	1398	861	583	429	312	205	102	76	74	97	379
2	99	73	667	750	1196	933	602	342	233	186	117	39	25	43	42	233
4	33	15	432	402	628	493	351	131	84	59	42	6	4	16	11	105
8	10	0	193	171	201	156	152	27	13	2	4	0	0	1	0	22
12	2	0	87	99	46	52	84	3	1	0	0	0	0	0	0	4
18	0	0	27	57	17	1	29	0	0	0	0	0	0	0	0	0
24	0	0	9	31	6	0	15	0	0	0	0	0	0	0	0	0
30	0	0	3	15	0	0	8	0	0	0	0	0	0	0	0	0
36	0	0	0	7	0	0	2	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Table 2.7-7 (Sheet 2 of 3)
Wind Direction Persistence/Wind Speed Distributions for the
Turkey Point Plant Property 10-Meter Level**

Speed Greater than or Equal to: 15.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	16	16	165	115	225	227	203	75	66	74	63	21	4	10	11	58
2	6	9	117	69	132	144	143	38	42	41	31	7	2	5	3	32
4	1	4	69	29	57	75	92	12	18	13	8	0	0	3	0	11
8	0	0	24	3	12	17	38	0	3	0	0	0	0	0	0	0
12	0	0	13	0	3	6	18	0	0	0	0	0	0	0	0	0
18	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 20.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	0	1	7	3	15	31	36	16	8	12	6	4	0	1	0	3
2	0	0	5	1	5	19	24	8	5	7	1	1	0	0	0	0
4	0	0	3	0	2	9	16	2	3	2	0	0	0	0	0	0
8	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 25.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	0	0	0	2	5	8	16	9	5	2	1	1	0	0	0	0
2	0	0	0	1	3	3	13	6	4	1	0	0	0	0	0	0
4	0	0	0	0	1	1	7	2	2	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2.7-7 (Sheet 3 of 3)
Wind Direction Persistence/Wind Speed Distributions for the Turkey Point Plant Property 10-Meter Level

Speed Greater than or Equal to: 30.00 mph																
Direction																
Hours	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1	0	0	0	0	2	0	7	8	4	0	0	0	0	0	0	0
2	0	0	0	0	1	0	2	6	3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 35.00 mph																
Direction																
Hours	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1	0	0	0	0	0	0	0	7	2	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 40.00 mph																
Direction																
Hours	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2.7-8 (Sheet 1 of 3) Wind Direction Persistence/Wind Speed Distributions for the Turkey Point Plant Property 60-Meter Level

Site Name: Turkey Point Units 6 & 7	
Start Date: 01/01/2002 00:00	End Date: 12/31/2002 23:00
Start Date: 01/01/2005 00:00	End Date: 12/31/2005 23:00
Start Date: 01/01/2006 00:00	End Date: 12/31/2006 23:00
Number of Sectors Included:	1 Width in Degrees 22.5
60-Meter Wind Speed (mph)	60-Meter Wind Direction (degrees)
Number of valid speed and direction observations: 23,943	

Speed Greater than or Equal to: 5.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	1506	594	1762	2539	3822	3326	2123	1537	1109	753	544	383	489	580	711	1527
2	984	208	1208	1697	2683	2268	1396	948	651	424	287	165	249	308	382	1051
4	481	39	703	914	1530	1171	738	421	283	168	115	51	93	112	129	593
8	154	1	320	354	569	375	302	84	72	25	33	6	12	17	18	244
12	48	0	155	199	217	115	147	16	27	1	7	1	4	2	0	114
18	5	0	70	105	37	8	38	0	6	0	0	0	0	0	0	38
24	0	0	36	58	0	0	8	0	0	0	0	0	0	0	0	18
30	0	0	18	28	0	0	0	0	0	0	0	0	0	0	0	8
36	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	2
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 10.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	1122	371	1403	2023	2965	2346	1476	965	760	513	383	234	290	344	447	1232
2	740	150	1035	1416	2113	1574	1028	603	459	290	221	110	160	188	250	881
4	385	32	640	803	1205	830	600	278	196	110	86	34	65	81	85	514
8	133	1	303	335	454	286	266	63	41	14	24	4	12	15	11	224
12	40	0	152	197	176	94	134	11	10	0	2	0	4	2	0	104
18	5	0	69	105	28	7	36	0	1	0	0	0	0	0	0	35
24	0	0	36	58	0	0	8	0	0	0	0	0	0	0	0	18
30	0	0	18	28	0	0	0	0	0	0	0	0	0	0	0	8
36	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	2
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2.7-8 (Sheet 2 of 3)
Wind Direction Persistence/Wind Speed Distributions for the Turkey Point Plant Property 60-Meter Level

Speed Greater than or Equal to: 15.00 mph																
Direction																
Hours	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1	438	137	923	921	1073	785	609	387	233	226	185	109	92	107	189	591
2	263	62	719	650	726	530	435	243	132	135	104	50	34	55	103	382
4	117	15	482	387	406	282	272	113	51	51	38	14	3	20	28	186
8	38	0	244	185	144	99	123	24	7	2	7	0	0	5	5	50
12	11	0	123	114	49	38	63	2	1	0	1	0	0	1	0	13
18	1	0	52	58	11	4	20	0	0	0	0	0	0	0	0	0
24	0	0	30	22	0	0	6	0	0	0	0	0	0	0	0	0
30	0	0	18	5	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 20.00 mph																
Direction																
Hours	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1	55	26	345	209	153	125	151	92	54	57	61	19	13	26	29	104
2	25	9	267	135	89	74	102	48	31	30	30	6	5	15	12	55
4	4	0	179	73	43	30	61	13	13	7	7	0	1	6	2	17
8	0	0	87	28	13	6	32	1	1	0	0	0	0	1	0	1
12	0	0	44	13	4	2	16	0	0	0	0	0	0	0	0	0
18	0	0	28	7	0	0	6	0	0	0	0	0	0	0	0	0
24	0	0	21	1	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 25.00 mph																
Direction																
Hours	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
1	2	1	79	11	14	32	36	30	9	16	9	7	3	10	2	12
2	0	0	55	3	5	22	24	17	5	8	4	3	1	6	0	6
4	0	0	34	0	1	14	13	4	3	1	0	0	0	4	0	0
8	0	0	15	0	0	6	5	0	0	0	0	0	0	0	0	0
12	0	0	4	0	0	2	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2.7-8 (Sheet 3 of 3)
Wind Direction Persistence/Wind Speed Distributions for the Turkey Point Plant Property 60-Meter Level

Speed Greater than or Equal to: 30.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	0	0	1	0	1	9	21	16	7	6	4	3	0	4	0	2
2	0	0	0	0	0	5	15	8	5	3	1	1	0	2	0	0
4	0	0	0	0	0	1	7	2	3	0	0	0	0	0	0	0
8	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 35.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	0	0	0	0	0	2	14	10	5	2	1	1	0	0	0	0
2	0	0	0	0	0	0	9	6	4	1	0	0	0	0	0	0
4	0	0	0	0	0	0	3	2	2	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Speed Greater than or Equal to: 40.00 mph																
Direction																
Hours	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	**SSE**	**S**	**SSW**	**SW**	**WSW**	**W**	**WNW**	**NW**	**NNW**
1	0	0	0	0	0	1	8	8	5	1	0	0	0	0	0	0
2	0	0	0	0	0	0	4	6	4	0	0	0	0	0	0	0
4	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2.7-9
Seasonal and Annual Vertical Stability Class and Mean 10-Meter Level Wind Speed Distributions for Units 6 & 7
(2002, 2005, and 2006)

	Vertical Stability Categories[a]						
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**
Winter							
Frequency (%)	5.17	6.08	9.14	26.64	31.01	11.67	10.29
Wind Speed (m/sec)	5.61	5.19	4.93	4.53	3.56	2.04	1.97
Spring							
Frequency (%)	12.52	7.62	7.52	23.72	30.37	9.35	8.90
Wind Speed (m/sec)	5.79	5.18	4.83	4.60	3.66	2.12	1.93
Summer							
Frequency (%)	2.78	4.37	6.52	30.78	42.21	11.61	1.73
Wind Speed (m/sec)	4.77	4.70	4.46	4.16	3.13	1.81	1.71
Fall							
Frequency (%)	3.33	4.38	6.39	32.61	41.67	8.45	3.17
Wind Speed (m/sec)	4.70	4.64	4.68	4.30	3.32	1.96	2.15
Annual							
Frequency (%)	5.90	5.59	7.36	28.51	36.47	10.26	5.92
Wind Speed (m/sec)	5.47	4.98	4.74	4.37	3.38	1.97	1.96

(a) Vertical stability based on temperature difference (ΔT) between 60-meter and 10-meter measurement levels.

Table 2.7-10 (Sheet 1 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record: 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class” A Extremely Unstable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	0	0	5	40	26	3	0	0	0	74
NNE	0	0	0	0	0	0	20	23	0	0	0	0	43
NE	0	0	0	0	0	1	35	73	12	0	0	0	121
ENE	0	0	0	0	0	0	9	69	10	0	0	0	88
E	0	0	0	0	0	0	15	72	16	0	0	0	103
ESE	0	0	0	0	0	0	39	110	35	0	0	0	184
SE	0	0	0	0	0	0	46	78	23	1	0	0	148
SSE	0	0	0	0	1	14	110	77	13	0	0	0	215
S	0	0	0	0	0	4	58	92	22	0	0	0	176
SSW	0	0	0	0	0	2	11	37	15	0	0	0	65
SW	0	0	0	0	0	0	6	16	6	0	0	0	28
WSW	0	0	0	0	0	0	5	6	2	0	0	0	13
W	0	0	0	0	1	0	8	6	2	0	0	0	17
WNW	0	0	0	1	0	3	8	4	3	0	0	0	19
NW	0	0	1	0	2	1	20	14	0	0	0	0	38
NNW	0	0	0	0	0	4	67	76	21	0	0	0	168
Totals	**0**	**0**	**1**	**1**	**4**	**34**	**497**	**779**	**183**	**1**	**0**	**0**	**1500**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**1500**
Total Hours for:	**Total Period**	**26280**

Note:Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-10 (Sheet 2 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7
(2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record: 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class: B Moderately Unstable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	0	2	8	46	17	2	0	0	0	75
NNE	0	0	0	0	1	4	21	11	0	0	0	0	37
NE	0	0	0	0	0	0	65	45	5	0	0	0	115
ENE	0	0	0	0	0	2	55	60	4	0	0	0	121
E	0	1	0	0	1	1	47	69	19	0	0	0	138
ESE	0	0	0	0	0	1	94	109	16	0	0	0	220
SE	0	0	0	0	0	11	46	65	22	0	0	0	144
SSE	0	0	0	0	0	22	81	50	5	0	0	0	158
S	0	0	0	0	0	8	72	47	7	0	0	0	134
SSW	0	0	0	0	2	6	22	38	5	0	0	0	73
SW	0	0	0	0	2	3	5	16	14	0	0	0	40
WSW	0	0	0	0	1	2	3	9	0	0	0	0	15
W	0	0	0	0	0	0	8	3	1	0	0	0	12
WNW	0	0	0	0	0	1	8	6	1	0	0	0	16
NW	0	0	1	0	3	2	22	4	0	0	0	0	32
NNW	0	0	0	0	2	8	56	18	5	0	0	0	89
Totals	**0**	**1**	**1**	**0**	**14**	**79**	**651**	**567**	**106**	**0**	**0**	**0**	**1419**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**1419**
Total Hours for:	**Total Period**	**26280**

Table 2.7-10 (Sheet 3 of 8) Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record: 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class: C Slightly Unstable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	0	2	16	43	15	3	0	0	0	79
NNE	0	0	0	0	2	5	33	4	1	0	0	0	45
NE	0	0	0	0	1	8	78	60	6	0	0	0	153
ENE	0	0	0	1	0	7	75	90	20	0	0	0	193
E	0	0	0	0	0	7	152	143	14	0	0	0	316
ESE	1	0	0	0	0	15	175	128	19	0	0	0	338
SE	0	0	0	1	2	16	76	72	10	1	0	0	178
SSE	0	0	0	1	4	30	81	34	5	0	0	0	155
S	0	0	0	1	2	14	43	27	5	0	0	0	92
SSW	0	0	0	0	5	9	16	42	6	0	0	0	78
SW	0	0	0	0	0	4	11	13	5	0	0	0	33
WSW	0	0	0	0	0	11	13	7	0	0	0	0	31
W	0	0	1	2	2	3	7	8	0	0	0	0	23
WNW	0	0	0	0	1	3	16	8	2	0	0	0	30
NW	0	0	0	1	2	15	19	7	0	0	0	0	44
NNW	0	0	0	3	2	18	35	18	6	0	0	0	82
Totals	**1**	**0**	**1**	**10**	**25**	**181**	**873**	**676**	**102**	**1**	**0**	**0**	**1870**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**1870**
Total Hours for:	**Total Period**	**26280**

Table 2.7-10 (Sheet 4 of 8) Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class: D Neutral

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	5	13	18	75	121	42	4	0	0	0	278
NNE	0	0	1	4	11	35	54	25	4	0	0	0	134
NE	2	0	3	7	14	72	179	239	76	0	0	0	592
ENE	1	1	1	6	14	112	480	336	29	0	0	0	980
E	2	2	0	7	20	105	799	520	61	0	0	0	1516
ESE	1	0	1	7	21	114	644	271	50	0	0	0	1109
SE	0	0	1	10	11	72	270	160	47	6	2	0	579
SSE	0	1	1	12	16	78	191	111	7	1	2	2	422
S	1	0	1	3	11	45	178	59	7	0	1	1	307
SSW	0	1	2	5	16	36	95	62	15	4	0	0	236
SW	0	0	2	4	11	19	73	54	17	1	0	0	181
WSW	1	1	1	5	7	20	56	39	11	0	0	0	141
W	0	0	0	1	16	39	64	21	1	0	0	0	142
WNW	0	0	3	9	15	37	57	14	3	0	0	0	138
NW	0	1	1	14	20	47	55	11	6	0	0	0	155
NNW	1	1	0	18	25	62	155	62	9	0	0	0	333
Totals	**9**	**8**	**23**	**125**	**246**	**968**	**3471**	**2026**	**347**	**12**	**5**	**3**	**7243**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**7243**
Total Hours for:	**Total Period**	**26280**

Table 2.7-10 (Sheet 5 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7
(2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class: E Slightly Stable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	2	11	19	46	151	131	13	0	0	0	0	373
NNE	3	7	9	17	22	44	75	20	6	0	0	0	203
NE	0	2	5	23	22	89	252	140	22	1	0	0	556
ENE	3	3	9	36	75	289	586	132	3	3	0	0	1139
E	4	5	5	69	181	594	062	232	20	7	2	0	2181
ESE	2	6	12	66	118	349	571	170	31	14	1	0	1340
SE	4	4	10	60	57	227	385	125	24	7	6	0	909
SSE	2	4	8	24	35	119	194	68	12	1	1	3	471
S	1	2	5	23	48	107	127	25	1	1	3	0	343
SSW	0	5	11	31	38	64	66	20	1	1	0	0	237
SW	2	5	7	22	27	44	32	24	5	1	0	0	169
WSW	0	3	4	41	27	32	38	6	0	0	0	0	151
W	1	1	9	36	36	70	34	3	0	0	0	0	190
WNW	2	4	11	40	44	60	27	3	0	0	0	0	191
NW	1	5	7	28	41	96	64	8	1	0	0	0	251
NNW	2	3	19	34	57	164	256	26	1	0	0	0	562
Totals	**27**	**61**	**142**	**569**	**874**	**2499**	**3900**	**1015**	**127**	**36**	**13**	**3**	**9266**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**9266**
Total Hours for:	**Total Period**	**26280**

Table 2.7-10 (Sheet 6 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7
(2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class: F Moderately Stable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	1	7	13	49	67	117	27	1	0	0	0	0	282
NNE	1	1	4	21	16	14	6	3	0	0	0	0	66
NE	3	3	5	17	11	13	10	0	0	0	0	0	62
ENE	1	1	2	16	21	30	5	1	0	0	0	0	77
E	3	1	8	25	42	116	15	0	0	0	0	0	210
ESE	4	3	7	23	44	80	20	0	0	0	0	0	181
SE	3	6	7	21	34	63	10	1	0	0	0	0	145
SSE	2	3	6	19	19	25	5	0	0	0	0	0	79
S	1	1	2	17	10	23	7	0	0	0	0	0	61
SSW	1	4	8	21	17	22	5	0	0	1	0	0	79
SW	3	4	4	33	24	26	4	1	0	1	0	0	100
WSW	4	4	8	23	32	48	11	2	0	1	0	0	133
W	8	5	9	40	53	49	1	0	0	0	0	0	165
WNW	11	7	7	49	46	46	7	0	0	0	0	0	173
NW	5	6	17	66	82	85	28	0	0	0	0	0	289
NNW	5	8	21	83	145	180	60	2	0	0	0	0	504
Totals	**56**	**64**	**128**	**523**	**663**	**937**	**221**	**11**	**0**	**3**	**0**	**0**	**2606**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**2606**
Total Hours for:	**Total Period**	**26280**

Table 2.7-10 (Sheet 7 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7
(2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record: 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

Stability Class: G Extremely Stable

Wind Speed (m/s)													
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	3	1	7	29	60	167	11	0	0	0	0	0	278
NNE	0	2	1	10	8	6	0	0	0	0	0	0	27
NE	2	0	1	4	0	2	0	0	0	0	0	0	9
ENE	0	0	0	2	0	0	0	0	0	0	0	0	2
E	1	1	0	1	5	2	0	0	0	0	0	0	10
ESE	0	0	1	0	2	0	0	0	0	0	0	0	3
SE	1	0	3	1	2	5	0	0	0	0	0	0	12
SSE	1	2	3	4	2	2	0	0	0	0	0	0	14
S	1	1	2	3	2	5	0	0	0	0	0	0	14
SSW	2	2	3	6	5	12	1	0	0	0	0	0	31
SW	3	0	3	14	15	21	2	0	0	0	0	0	58
WSW	1	1	2	11	22	20	2	0	0	0	0	0	59
W	1	3	6	21	33	24	0	0	0	0	0	0	88
WNW	3	5	9	39	52	35	0	0	0	0	0	0	143
NW	5	3	5	35	53	102	7	0	0	0	0	0	210
NNW	7	2	11	34	135	327	29	0	0	0	0	0	545
Totals	**31**	**23**	**57**	**214**	**396**	**730**	**52**	**0**	**0**	**0**	**0**	**0**	**1503**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**1503**
Total Hours for:	**Total Period**	**26280**

Table 2.7-10 (Sheet 8 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (10-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Summary of All Stability Classes
Total Period

Period of Record: 3-Year Composite (2002, 2005, 2006)

Elevation: 10M **Speed:** WS10M

Direction: WD10M **Lapse:** DT10M-60M

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	4	10	36	110	195	539	419	114	12	0	0	0	1439
NNE	4	10	15	52	60	108	209	86	11	0	0	0	555
NE	7	5	14	51	48	185	619	557	121	1	0	0	1608
ENE	5	5	12	61	110	440	210	688	66	3	0	0	2600
E	10	10	13	102	249	825	2090	1036	130	7	2	0	4474
ESE	8	9	21	96	185	559	543	788	151	14	1	0	3375
SE	8	10	21	93	106	394	833	501	126	15	8	0	2115
SSE	5	10	18	60	77	290	662	340	42	2	3	5	1514
S	4	4	10	47	73	206	485	250	42	1	4	1	1127
SSW	3	12	24	63	83	151	216	199	42	6	0	0	799
SW	8	9	16	73	79	117	133	124	47	3	0	0	609
WSW	6	9	15	80	89	133	128	69	13	1	0	0	543
W	10	9	25	100	141	185	122	41	4	0	0	0	637
WNW	16	16	30	138	158	185	123	35	9	0	0	0	710
NW	11	15	32	144	203	348	215	44	7	0	0	0	1019
NNW	15	14	51	172	366	763	658	202	42	0	0	0	2283
Totals	**124**	**157**	**353**	**1442**	**2222**	**5428**	**9665**	**5074**	**865**	**53**	**18**	**6**	**25407**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**873**
Number of Valid Hours for:	**Total Period**	**25407**
Total Hours for:	**Total Period**	**26280**

Table 2.7-11 (Sheet 1 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record: 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

Stability Class: A Extremely Unstable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	0	0	0	14	36	22	2	0	0	74
NNE	0	0	0	0	0	0	5	21	18	1	0	0	45
NE	0	0	0	0	0	0	1	43	72	7	0	0	123
ENE	0	0	0	0	0	0	0	31	40	5	0	0	76
E	0	0	0	0	0	0	4	45	54	5	0	0	108
ESE	0	0	0	0	0	0	16	89	66	3	0	0	174
SE	0	0	0	0	0	0	34	55	42	8	0	0	139
SSE	0	0	0	0	0	6	71	95	30	1	0	0	203
S	0	0	0	0	0	0	34	89	50	6	0	0	179
SSW	0	0	0	0	0	2	6	23	29	9	0	0	69
SW	0	0	0	0	0	0	1	6	13	4	0	0	24
WSW	0	0	0	0	0	0	5	4	4	0	0	0	13
W	0	0	0	0	1	0	1	6	6	2	0	0	16
WNW	0	0	0	0	0	1	3	9	4	0	3	0	20
NW	0	0	0	0	0	3	5	14	21	0	0	0	43
NNW	0	0	0	0	0	1	14	61	67	10	0	0	153
Totals	**0**	**0**	**0**	**0**	**1**	**13**	**214**	**627**	**538**	**63**	**3**	**0**	**1459**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**1459**
Total Hours for:	**Total Period**	**26280**

Note: Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 2 of 8) Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

Stability Class: B Moderately Unstable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	0	0	4	22	32	11	1	0	0	70
NNE	0	0	0	0	0	1	13	22	7	0	0	0	43
NE	0	0	0	0	0	1	22	68	42	5	0	0	138
ENE	0	0	1	0	1	1	12	56	42	3	0	0	116
E	0	0	0	0	0	1	16	62	43	1	0	0	123
ESE	0	0	0	0	0	1	51	101	42	3	0	0	198
SE	0	0	0	0	1	6	42	44	43	6	0	0	142
SSE	0	0	0	0	0	11	57	48	26	1	0	0	143
S	0	0	0	0	0	3	39	70	21	1	0	0	134
SSW	0	0	0	0	1	3	15	34	16	3	0	0	72
SW	0	0	0	0	2	1	5	3	21	4	0	0	36
WSW	0	0	0	0	0	0	3	6	6	0	0	0	15
W	0	0	0	0	1	0	3	4	3	1	0	0	12
WNW	0	0	0	0	0	1	2	4	10	0	1	0	18
NW	0	0	0	0	2	2	12	11	3	0	0	0	30
NNW	0	0	0	0	0	4	24	35	18	3	0	0	84
Totals	**0**	**0**	**1**	**0**	**8**	**40**	**338**	**600**	**354**	**32**	**1**	**0**	**1374**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**1374**
Total Hours for:	**Total Period**	**26280**

Note: Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 3 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

Stability Class: C Slightly Unstable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	0	0	7	24	30	17	0	0	0	78
NNE	0	0	0	0	0	3	19	19	4	2	0	0	47
NE	0	0	0	1	0	6	35	62	56	7	0	0	167
ENE	0	0	0	0	1	5	27	77	69	11	0	0	190
E	0	0	0	0	0	2	86	147	64	1	0	0	300
ESE	0	0	0	0	0	2	111	123	60	1	0	0	297
SE	0	0	0	0	1	11	54	68	47	2	1	0	184
SSE	0	0	0	1	4	16	58	49	13	1	0	0	142
S	0	0	0	2	1	13	25	31	11	1	0	0	84
SSW	0	0	0	0	2	5	14	24	24	4	0	0	73
SW	0	0	0	0	1	1	7	16	11	2	1	0	39
WSW	0	0	0	0	0	6	7	6	5	0	0	0	24
W	0	0	0	1	0	8	1	8	5	0	0	0	23
WNW	0	0	0	1	0	2	6	7	10	1	1	0	28
NW	0	0	0	0	3	5	16	10	8	2	0	0	44
NNW	0	0	0	0	0	5	18	26	16	5	0	0	70
Totals	**0**	**0**	**0**	**6**	**13**	**97**	**508**	**703**	**420**	**40**	**3**	**0**	**1790**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**1790**
Total Hours for:	**Total Period**	**26280**

Note: Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 4 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7
(2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-10M

Stability Class: D Neutral

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	2	4	13	30	90	83	42	2	0	0	266
NNE	0	0	0	1	8	20	42	24	30	4	0	0	129
NE	0	0	1	2	7	40	117	113	238	102	5	0	625
ENE	0	0	0	1	13	44	226	337	339	28	0	0	988
E	0	3	0	3	7	42	389	514	290	24	0	0	1272
ESE	0	0	1	4	7	64	444	373	146	17	0	0	1056
SE	0	0	1	6	6	40	171	164	150	21	2	2	563
SSE	0	0	1	5	6	37	137	115	91	7	5	4	408
S	0	0	1	5	4	23	98	103	44	3	1	2	284
SSW	0	0	0	2	6	19	55	70	48	8	4	0	212
SW	0	0	0	3	7	12	31	64	52	6	2	0	177
WSW	0	0	0	2	2	16	24	20	31	8	1	0	104
W	0	0	0	4	7	19	26	37	30	3	0	0	126
WNW	0	0	0	4	7	25	36	26	18	6	1	0	123
NW	0	0	0	2	14	16	39	26	17	9	0	0	123
NNW	0	0	1	4	10	25	49	102	91	8	1	0	291
Totals	**0**	**3**	**8**	**52**	**124**	**472**	**1974**	**2171**	**1657**	**256**	**22**	**8**	**6747**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**6747**
Total Hours for:	**Total Period**	**26280**

Note:Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 5 of 8) Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

Stability Class: E Slightly Stable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	0	2	1	20	109	167	56	0	0	0	355
NNE	0	0	0	1	3	13	52	66	36	0	0	0	171
NE	0	0	3	5	11	17	96	169	225	55	0	0	581
ENE	0	0	0	2	8	49	283	476	237	11	0	0	1066
E	0	3	1	5	12	101	553	799	340	18	3	0	1835
ESE	1	0	1	5	14	92	474	505	225	17	10	1	1345
SE	0	0	0	8	20	97	311	339	157	14	11	5	962
SSE	0	2	2	4	13	63	168	143	113	16	4	4	532
S	0	0	5	7	8	55	129	98	40	4	2	2	350
SSW	0	0	1	6	12	29	90	64	32	2	1	0	237
SW	0	0	2	3	6	27	50	42	28	3	1	0	162
WSW	0	0	1	4	4	22	28	34	12	0	0	0	105
W	0	0	0	10	8	30	49	41	5	1	0	0	144
WNW	0	1	3	5	6	22	57	46	17	1	0	0	158
NW	0	0	3	9	9	29	46	45	41	3	0	0	185
NNW	0	0	1	6	7	24	78	173	129	1	0	0	419
Totals	**1**	**6**	**23**	**82**	**142**	**690**	**2573**	**3207**	**1693**	**146**	**32**	**12**	**8607**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**8607**
Total Hours for:	**Total Period**	**26280**

Note:Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 6 of 8) Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

Stability Class: F Moderately Stable

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	0	2	7	14	28	83	124	51	0	0	0	309
NNE	0	0	0	7	6	19	41	18	4	0	0	0	95
NE	0	0	1	9	6	30	45	8	7	0	0	0	106
ENE	0	0	1	6	9	21	30	13	4	0	0	0	84
E	1	3	1	7	11	29	82	49	4	0	0	0	187
ESE	1	1	2	6	11	29	112	73	7	0	0	0	242
SE	0	2	5	6	11	25	69	55	1	0	0	0	174
SSE	0	0	5	12	8	29	54	27	0	0	0	0	135
S	0	0	1	1	5	17	35	20	0	0	0	0	79
SSW	1	1	3	1	7	14	53	11	3	0	1	0	95
SW	0	1	3	3	7	15	37	19	2	0	1	0	88
WSW	0	0	2	2	9	16	28	23	13	0	1	0	94
W	0	1	7	8	9	23	54	53	7	0	0	0	162
WNW	0	0	1	3	11	31	53	49	10	0	0	0	158
NW	0	1	3	4	9	20	45	45	37	0	0	0	164
NNW	0	0	4	8	10	33	68	102	76	0	0	0	301
Totals	**3**	**10**	**41**	**90**	**143**	**379**	**889**	**689**	**226**	**0**	**3**	**0**	**2473**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**2473**
Total Hours for:	**Total Period**	**26280**

Note:Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 7 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7 (2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

Stability Class: G Extremely Stable

Wind Speed (m/s)													
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	1	1	5	7	29	65	128	117	3	0	0	356
NNE	0	2	1	4	5	19	45	14	7	0	0	0	97
NE	0	2	0	1	9	23	38	1	0	0	0	0	74
ENE	0	1	2	2	6	23	19	1	0	0	0	0	54
E	0	1	1	7	4	13	23	4	0	0	0	0	53
ESE	0	0	2	8	4	13	11	1	0	0	0	0	39
SE	0	1	3	2	4	6	7	5	0	0	0	0	28
SSE	0	1	0	5	3	7	13	7	0	0	0	0	36
S	0	1	0	0	5	7	6	15	1	0	0	0	35
SSW	0	0	0	4	2	4	14	11	6	0	0	0	41
SW	0	1	0	4	1	9	16	21	10	0	0	0	62
WSW	1	0	1	3	4	7	26	10	11	0	0	0	63
W	0	0	1	2	4	12	34	26	3	0	0	0	82
WNW	0	0	0	2	4	22	47	44	4	0	0	0	123
NW	2	1	1	4	6	23	49	39	20	0	0	0	145
NNW	0	2	0	4	2	21	40	77	59	0	0	0	205
Totals	**3**	**14**	**13**	**57**	**70**	**238**	**453**	**404**	**238**	**3**	**0**	**0**	**1493**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**1493**
Total Hours for:	**Total Period**	**26280**

Note:Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-11 (Sheet 8 of 8)
Joint Frequency Distribution of Wind Speed and Wind Direction (60-Meter Level) by Atmospheric Stability Class for Units 6 & 7
(2002, 2005, and 2006)

Hours at Each Wind Speed and Direction

Summary of All Stability Classes
Total Period

Period of Record 3-Year Composite (2002, 2005, 2006)

Elevation: 60M **Speed:** WS60M

Direction: WD60M **Lapse:** DT10M-60M

	Wind Speed (m/s)												
Wind Direction (from)	**0.22–0.50**	**0.51–0.75**	**0.76–1.0**	**1.1–1.5**	**1.6–2.0**	**2.1–3.0**	**3.1–5.0**	**5.1–7.0**	**7.1–10.0**	**10.1–13.0**	**13.1–18.0**	**>18.0**	**Total**
N	0	1	5	18	35	118	407	600	316	8	0	0	1508
NNE	0	2	1	13	22	75	217	184	106	7	0	0	627
NE	0	2	5	18	33	117	354	464	640	176	5	0	1814
ENE	0	1	4	11	38	143	597	991	731	58	0	0	2574
E	1	10	3	22	34	188	1153	1620	795	49	3	0	3878
ESE	2	1	6	23	36	201	1219	1265	546	41	10	1	3351
SE	0	3	9	22	43	185	688	730	440	51	14	7	2192
SSE	0	3	8	27	34	169	558	484	273	26	9	8	1599
S	0	1	7	15	23	118	366	426	167	15	3	4	1145
SSW	1	1	4	13	30	76	247	237	158	26	6	0	799
SW	0	2	5	13	24	65	147	171	137	19	5	0	588
WSW	1	0	4	11	19	67	121	103	82	8	2	0	418
W	0	1	8	25	30	92	168	175	59	7	0	0	565
WNW	0	1	4	15	28	104	204	185	73	8	6	0	628
NW	2	2	7	19	43	98	212	190	147	14	0	0	734
NNW	0	2	6	22	29	113	291	576	456	27	1	0	1523
Totals	**7**	**33**	**86**	**287**	**501**	**1929**	**6949**	**8401**	**5126**	**540**	**64**	**20**	**23943**

Number of Calm Hours not included above for:	**Total Period**	**0**
Number of Variable Direction Hours for:	**Total Period**	**0**
Number of Invalid Hours for:	**Total Period**	**2337**
Number of Valid Hours for:	**Total Period**	**23943**
Total Hours for:	**Total Period**	**26280**

Note: Stability class based on the vertical temperature difference (ΔT or lapse rate) between the 60-meter and 10-meter measurement levels.

Table 2.7-12
Exclusion Area Boundary and Low Population Zones Distances from Units 6 & 7 Power Block Area

Distance from Units 6 & 7 PBA				
Directional Sector	**To EAB (feet)**	**To EAB (meters)**	**To LPZ (feet)**	**To LPZ (meters)**
S	2,756	840	22,484	6,853
SSW	2,687	819	22,474	6,850
SW	2,375	724	22,411	6,831
WSW	2,559	780	23,284	7,097
W	2,566	782	25,230	7,690
WNW	2,589	789	25,230	7,690
NW	2,513	766	26,568	8,098
NNW	2,516	767	28,330	8,635
N	2,516	767	29,423	8,968
NNE	2,516	767	29,209	8,903
NE	**1,427**	**435**	27,677	8,436
ENE	**1,503**	**458**	26,371	8,038
E	**1,572**	**479**	24,862	7,578
ESE	**1,932**	**589**	23,655	7,210
SE	**1,923**	**586**	22,805	6,951
SSE	2,782	848	22,523	6,865

Bolded values in table represent sector distances eligible for the building wake credit.

Table 2.7-13
PAVAN Results — X/Q Values at the EAB

Downwind Sector	Distance (Meters)	0–2 hrs (sec/m3)	0–8 hrs (sec/m3)	8–24 hrs (sec/m3)	1–4 days (sec/m3)	4–30 days (sec/m3)	Annual Average (sec/m3)	Hrs Per Yr Max 0-2 Hr X/Q Exceeded In Sector
S	840	2.51E-04	1.60E-04	1.28E-04	7.87E-05	3.91E-05	1.67E-05	6.2
SSW	819	1.03E-04	6.27E-05	4.89E-05	2.86E-05	1.32E-05	5.15E-06	1.1
SW	724	1.25E-04	8.25E-05	6.69E-05	4.25E-05	2.21E-05	9.95E-06	2.8
WSW	780	1.17E-04	8.27E-05	6.97E-05	4.80E-05	2.82E-05	1.46E-05	0.5
W	782	1.38E-04	1.06E-04	9.27E-05	6.93E-05	4.57E-05	2.74E-05	2.2
WNW	789	1.33E-04	9.65E-05	8.23E-05	5.83E-05	3.55E-05	1.94E-05	1.7
NW	766	1.39E-04	9.58E-05	7.94E-05	5.28E-05	2.94E-05	1.43E-05	2
NNW	767	1.18E-04	7.77E-05	6.30E-05	4.00E-05	2.08E-05	9.39E-06	2.3
N	767	1.10E-04	7.00E-05	5.57E-05	3.41E-05	1.68E-05	7.06E-06	1.4
NNE	767	1.23E-04	7.73E-05	6.13E-05	3.71E-05	1.80E-05	7.44E-06	3
NE	**435**	**3.78E-04**	**2.35E-04**	**1.85E-04**	**1.11E-04**	**5.29E-05**	**2.14E-05**	**36.1**
ENE	**458**	**3.66E-04**	**2.26E-04**	**1.78E-04**	**1.05E-04**	**4.96E-05**	**1.98E-05**	**32.6**
E	**479**	**4.01E-04**	**2.55E-04**	**2.03E-04**	**1.24E-04**	**6.09E-05**	**2.56E-05**	**39.5**
ESE	**589**	**3.51E-04**	**2.24E-04**	**1.78E-04**	**1.09E-04**	**5.42E-05**	**2.29E-05**	**28.6**
SE	**586**	**4.25E-04**	**2.72E-04**	**2.18E-04**	**1.35E-04**	**6.73E-05**	**2.89E-05**	**43.7**
SSE	848	3.04E-04	2.05E-04	1.69E-04	1.10E-04	5.98E-05	2.83E-05	12.9
Max 0-2 hr X/Q		4.25E-04	Total Hours Entire Site Max 0-2 hr X/Q Exceeded					216.7
S	840	2.48E-04	1.46E-04	1.12E-04	6.30E-05	2.76E-05	1.00E-05	6.4
SSW	819	9.36E-05	5.35E-05	4.05E-05	2.21E-05	9.26E-06	3.19E-06	1.2
SW	724	1.03E-04	6.48E-05	5.14E-05	3.11E-05	1.51E-05	6.26E-06	2.8
WSW	780	1.10E-04	7.30E-05	5.95E-05	3.83E-05	2.03E-05	9.36E-06	0.5
W	782	1.37E-04	9.74E-05	8.21E-05	5.66E-05	3.32E-05	1.72E-05	2.2
WNW	789	1.30E-04	8.81E-05	7.26E-05	4.76E-05	2.60E-05	1.24E-05	1.7
NW	766	1.35E-04	8.63E-05	6.89E-05	4.23E-05	2.10E-05	8.91E-06	2.1
NNW	767	1.10E-04	6.81E-05	5.35E-05	3.17E-05	1.50E-05	5.98E-06	2.4
N	767	1.01E-04	6.01E-05	4.64E-05	2.66E-05	1.19E-05	4.47E-06	1.5
NNE	767	1.17E-04	6.85E-05	5.24E-05	2.93E-05	1.27E-05	4.58E-06	3.1
NE	**435**	**3.54E-04**	**2.03E-04**	**1.54E-04**	**8.46E-05**	**3.57E-05**	**1.24E-05**	**36**
ENE	**458**	**3.26E-04**	**1.87E-04**	**1.42E-04**	**7.80E-05**	**3.30E-05**	**1.15E-05**	**29.1**
E	**479**	**3.92E-04**	**2.28E-04**	**1.74E-04**	**9.68E-05**	**4.17E-05**	**1.49E-05**	**39.1**
ESE	**589**	**3.51E-04**	**2.05E-04**	**1.56E-04**	**8.69E-05**	**3.74E-05**	**1.34E-05**	**29.5**
SE	**586**	**4.19E-04**	**2.47E-04**	**1.89E-04**	**1.06E-04**	**4.64E-05**	**1.69E-05**	**43.7**
SSE	848	2.98E-04	1.86E-04	1.46E-04	8.75E-05	4.17E-05	1.69E-05	13.1
Max 0-2 hr X/Q		4.19E-04	Total Hours Entire Site Max 0-2 hr X/Q Exceeded					214.3

Bolded values indicate sectors eligible to receive the building wake credit.

Table 2.7-14
PAVAN Results — X/Q Values LPZ
(Building Wake Credit Not Included)

Downwind Sector	Distance (Meters)	0–2 hrs (sec/m^3)	0–8 hrs (sec/m^3)	8–24 hrs (sec/m^3)	1–4 days (sec/m^3)	4–30 days (sec/m^3)	Annual Average (sec/m^3)	Hrs Per Yr Max 0-2 Hr X/Q Exceeded In Sector
S	6853	3.19E-05	1.37E-05	8.94E-06	3.56E-06	9.50E-07	1.89E-07	21.1
SSW	6850	8.26E-06	3.59E-06	2.37E-06	9.60E-07	2.63E-07	5.38E-08	3.2
SW	6831	7.44E-06	3.52E-06	2.42E-06	1.07E-06	3.34E-07	8.02E-08	3.4
WSW	7097	8.69E-06	4.31E-06	3.04E-06	1.42E-06	4.76E-07	1.25E-07	0.7
W	7690	1.14E-05	5.86E-06	4.20E-06	2.05E-06	7.27E-07	2.05E-07	2.4
WNW	7690	1.05E-05	5.19E-06	3.64E-06	1.69E-06	5.61E-07	1.45E-07	2.3
NW	8098	9.70E-06	4.51E-06	3.08E-06	1.34E-06	4.08E-07	9.49E-08	2.8
NNW	8635	6.86E-06	3.08E-06	2.07E-06	8.70E-07	2.51E-07	5.46E-08	2.8
N	8968	5.29E-06	2.34E-06	1.56E-06	6.46E-07	1.82E-07	3.87E-08	1.6
NNE	8903	7.34E-06	3.13E-06	2.05E-06	8.15E-07	2.17E-07	4.28E-08	3
NE	8436	1.12E-05	4.61E-06	2.95E-06	1.12E-06	2.80E-07	5.12E-08	5.2
ENE	8038	1.23E-05	5.05E-06	3.24E-06	1.23E-06	3.09E-07	5.67E-08	3.7
E	7578	1.85E-05	7.67E-06	4.94E-06	1.90E-06	4.79E-07	8.92E-08	8.7
ESE	7210	2.57E-05	1.07E-05	6.89E-06	2.66E-06	6.77E-07	1.27E-07	15.4
SE	6951	3.00E-05	1.28E-05	8.31E-06	3.28E-06	8.65E-07	1.69E-07	20.4
SSE	6865	4.15E-05	1.87E-05	1.25E-05	5.25E-06	1.51E-06	3.29E-07	43.7
Max 0-2 hr X/Q		4.15E-05	Total Hours Entire Site Max 0-2 hr X/Q Exceeded					140.4

Table 2.7-15
Distances to Sensitive Receptors for XOQDOQ Modeling
From Units 6 & 7 Power Block Area

Direction	Name	Type of Receptor	Distance From Power Block Area (Miles)
N	Biscayne National Park	Resident	2.7
NNW	Military Canal Residence	Resident/Meat Animal	5.1
NNW	Bananas, plantains, coconuts, lemons	Vegetable Garden	5.1
NW	Satellite School	Resident	1.99
NW	Single-Family Home	Resident/Meat Animal	4.0
NW	Mowry Drive Residence	Vegetable Garden	4.8
W	Unit 7	Not Applicable	0.13

Table 2.7-16
XOQDOQ-Predicted X/Q and D/Q Values at Receptors of Interest

Type of Location	Sector	Distance (miles)	X/Q (s/m^3) (No Decay, no dry deposition)
EAB	SSE	0.53	1.7E-5
	SE	0.36	1.7E-5
	W	0.49	1.7E-5
Residence/Meat Animal	N	2.7	1.4E-7
	NW	4.0	1.3E-7
	NNW	5.1	5.5E-8
Vegetable Garden	NW	4.8	9.6E-8
	NNW	5.1	5.5E-8
Unit 7	W	0.13	1.6E-4
School	NW	1.99	5.7E-7
Property Boundary	SSE	0.35	3.4E-5
Type of Location	**Sector**	**Distance (miles)**	**X/Q (s/m^3) (2.26-Day Decay, no dry deposition)**
EAB	SSE	0.53	1.7E-5
	SE	0.36	1.7E-5
	W	0.49	1.7E-5
Residence/Meat Animal	N	2.7	1.3E-7
	NW	4.0	1.3E-7
	NNW	5.1	5.4E-8
Vegetable Garden	NW	4.8	9.4E-8
	NNW	5.1	5.4E-8
Unit 7	W	0.13	1.6E-4
School	NW	1.99	5.2E-7
Property Boundary	SSE	0.35	3.4E-5
Type of Location	**Sector**	**Distance (miles)**	**X/Q (s/m^3) (8-Day Decay, dry deposition)**
EAB	SE	0.36	1.6E-5
	W	0.49	1.6E-5
Residence/Meat Animal	N	2.7	1.1E-7
	NW	4.0	1.0E-7
	NNW	5.1	4.1E-8
Vegetable Garden	NW	4.8	7.2E-8
	NNW	5.1	4.1E-8
Unit 7	W	0.13	1.5E-4
School	NW	1.99	4.3E-7
Property Boundary	SSE	0.35	3.2E-5
Type of Location	**Sector**	**Distance (miles)**	**D/Q ($1/m^2$)**
EAB	W	0.49	1.4E-7
Residence/Meat Animal	N	2.7	7.5E-10
	NW	4.0	5.8E-10
	NNW	5.1	2.4E-10
Vegetable Garden	NW	4.8	3.8E-10
	NNW	5.1	2.4E-10
Unit 7	W	0.13	1.0E-6
School	NW	1.99	2.9E-9
Property Boundary	SSE	0.35	1.2E-7

Table 2.7-17 (Sheet 1 of 2)
XOQDOQ-Predicted Annual Average X/Q Values at the Standard Radial Distances and Distance-Segment Boundaries
No Decay Undepleted X/Qs

No Decay Undepleted X/Qs at Various Distances

RELEASE POINT - GROUND LEVEL - NO INTERMITTENT RELEASES
NO DECAY, UNDEPLETED
CORRECTED USING STANDARD OPEN TERRAIN FACTORS
ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES FROM THE SITE

SECTOR	.250	.500	.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	3.597E-05	1.079E-05	5.472E-06	2.745E-06	1.107E-06	6.119E-07	3.987E-07	2.843E-07	2.155E-07	1.705E-07	1.394E-07
SSW	1.064E-05	3.280E-06	1.745E-06	8.876E-07	3.595E-07	1.968E-07	1.263E-07	8.892E-08	6.668E-08	5.230E-08	4.243E-08
SW	1.673E-05	5.351E-06	2.913E-06	1.481E-06	5.939E-07	3.208E-07	2.029E-07	1.413E-07	1.050E-07	8.168E-08	6.579E-08
WSW	2.761E-05	8.963E-06	5.030E-06	2.577E-06	1.035E-06	5.582E-07	3.520E-07	2.444E-07	1.810E-07	1.405E-07	1.129E-07
W	5.162E-05	1.657E-05	9.278E-06	4.764E-06	1.924E-06	1.042E-06	6.592E-07	4.590E-07	3.409E-07	2.651E-07	2.135E-07
WNW	3.753E-05	1.202E-05	6.649E-06	3.403E-06	1.372E-06	7.415E-07	4.686E-07	3.259E-07	2.419E-07	1.880E-07	1.513E-07
NW	2.636E-05	8.298E-06	4.552E-06	2.332E-06	9.450E-07	5.136E-07	3.263E-07	2.279E-07	1.697E-07	1.323E-07	1.068E-07
NNW	1.776E-05	5.564E-06	2.994E-06	1.519E-06	6.093E-07	3.298E-07	2.092E-07	1.460E-07	1.086E-07	8.467E-08	6.830E-08
N	1.330E-05	4.161E-06	2.250E-06	1.142E-06	4.586E-07	2.484E-07	1.577E-07	1.101E-07	8.201E-08	6.395E-08	5.161E-08
NNE	1.375E-05	4.255E-06	2.256E-06	1.145E-06	4.624E-07	2.526E-07	1.618E-07	1.139E-07	8.532E-08	6.688E-08	5.423E-08
NE	1.429E-05	4.344E-06	2.247E-06	1.138E-06	4.620E-07	2.547E-07	1.649E-07	1.169E-07	8.822E-08	6.955E-08	5.667E-08
ENE	1.447E-05	4.389E-06	2.263E-06	1.149E-06	4.695E-07	2.595E-07	1.681E-07	1.193E-07	9.003E-08	7.099E-08	5.786E-08
E	2.023E-05	6.085E-06	3.110E-06	1.577E-06	6.447E-07	3.574E-07	2.324E-07	1.654E-07	1.252E-07	9.890E-08	8.075E-08
ESE	2.616E-05	7.820E-06	3.961E-06	1.995E-06	8.100E-07	4.494E-07	2.934E-07	2.095E-07	1.589E-07	1.259E-07	1.030E-07
SE	3.274E-05	9.759E-06	4.913E-06	2.473E-06	1.005E-06	5.582E-07	3.646E-07	2.605E-07	1.977E-07	1.566E-07	1.282E-07
SSE	6.209E-05	1.845E-05	9.261E-06	4.638E-06	1.872E-06	1.039E-06	6.799E-07	4.866E-07	3.698E-07	2.933E-07	2.403E-07

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES FROM THE SITE

SECTOR	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	1.169E-07	6.302E-08	4.218E-08	2.527E-08	1.762E-08	1.334E-08	1.064E-08	8.789E-09	7.454E-09	6.448E-09	5.665E-09
SSW	3.534E-08	1.857E-08	1.221E-08	7.143E-09	4.902E-09	3.666E-09	2.894E-09	2.372E-09	1.997E-09	1.717E-09	1.500E-09
SW	5.445E-08	2.796E-08	1.809E-08	1.035E-08	7.000E-09	5.177E-09	4.051E-09	3.295E-09	2.757E-09	2.357E-09	2.049E-09
WSW	9.326E-08	4.744E-08	3.048E-08	1.725E-08	1.157E-08	8.497E-09	6.610E-09	5.349E-09	4.455E-09	3.793E-09	3.285E-09
W	1.766E-07	9.034E-08	5.828E-08	3.317E-08	2.233E-08	1.645E-08	1.282E-08	1.040E-08	8.675E-09	7.396E-09	6.415E-09
WNW	1.251E-07	6.399E-08	4.128E-08	2.350E-08	1.584E-08	1.168E-08	9.113E-09	7.394E-09	6.173E-09	5.267E-09	4.571E-09
NW	8.851E-08	4.568E-08	2.966E-08	1.704E-08	1.155E-08	8.551E-09	6.698E-09	5.451E-09	4.563E-09	3.902E-09	3.394E-09
NNW	5.662E-08	2.927E-08	1.903E-08	1.097E-08	7.462E-09	5.544E-09	4.354E-09	3.552E-09	2.980E-09	2.553E-09	2.225E-09
N	4.280E-08	2.215E-08	1.442E-08	8.318E-09	5.657E-09	4.203E-09	3.300E-09	2.693E-09	2.259E-09	1.935E-09	1.686E-09
NNE	4.514E-08	2.369E-08	1.557E-08	9.096E-09	6.239E-09	4.665E-09	3.683E-09	3.018E-09	2.541E-09	2.184E-09	1.908E-09
NE	4.737E-08	2.525E-08	1.676E-08	9.931E-09	6.871E-09	5.171E-09	4.104E-09	3.378E-09	2.855E-09	2.462E-09	2.157E-09
ENE	4.837E-08	2.578E-08	1.712E-08	1.014E-08	7.013E-09	5.277E-09	4.187E-09	3.445E-09	2.911E-09	2.510E-09	2.199E-09
E	6.762E-08	3.625E-08	2.416E-08	1.438E-08	9.983E-09	7.531E-09	5.987E-09	4.934E-09	4.175E-09	3.605E-09	3.161E-09
ESE	8.640E-08	4.664E-08	3.123E-08	1.872E-08	1.305E-08	9.880E-09	7.877E-09	6.508E-09	5.518E-09	4.772E-09	4.192E-09
SE	1.076E-07	5.813E-08	3.896E-08	2.338E-08	1.631E-08	1.236E-08	9.856E-09	8.146E-09	6.910E-09	5.978E-09	5.253E-09
SSE	2.019E-07	1.095E-07	7.360E-08	4.433E-08	3.102E-08	2.354E-08	1.881E-08	1.557E-08	1.322E-08	1.145E-08	1.007E-08

VENT AND BUILDING PARAMETERS:

RELEASE HEIGHT	(METERS)	.00	REP. WIND HEIGHT	(METERS)	10.0
DIAMETER	(METERS)	.00	BUILDING HEIGHT	(METERS)	69.7
EXIT VELOCITY	(METERS)	.00	BLDG.MIN.CRS.SEC.AREA	(SQ.METERS)	2636.0
			HEAT EMISSION RATE	(CAL/SEC)	.0

Table 2.7-17 (Sheet 2 of 2)
XOQDOQ-Predicted Annual Average X/Q Values at the Standard Radial Distances and Distance-Segment Boundaries
No Decay Undepleted X/Qs

RELEASE POINT - GROUND LEVEL - NO INTERMITTENT RELEASES
NO DECAY, UNDEPLETED
CHI/Q (SEC/METER CUBED) FOR EACH SEGMENT

DIRECTION FROM SITE	SEGMENT BOUNDARIES IN MILES FROM THE SITE .5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	5.442E-06	1.251E-06	4.098E-07	2.180E-07	1.403E-07	6.573E-08	2.563E-08	1.340E-08	8.809E-09	6.456E-09
SSW	1.705E-06	4.046E-07	1.301E-07	6.756E-08	4.273E-08	1.947E-08	7.274E-09	3.687E-09	2.378E-09	1.720E-09
SW	2.818E-06	6.697E-07	2.097E-07	1.065E-07	6.630E-08	2.946E-08	1.058E-08	5.213E-09	3.306E-09	2.361E-09
WSW	4.814E-06	1.166E-06	3.639E-07	1.837E-07	1.138E-07	5.009E-08	1.767E-08	8.561E-09	5.369E-09	3.801E-09
W	8.893E-06	2.163E-06	6.811E-07	3.457E-07	2.151E-07	9.525E-08	3.393E-08	1.657E-08	1.043E-08	7.412E-09
WNW	6.400E-06	1.543E-06	4.843E-07	2.454E-07	1.525E-07	6.748E-08	2.405E-08	1.176E-08	7.420E-09	5.277E-09
NW	4.398E-06	1.061E-06	3.369E-07	1.721E-07	1.076E-07	4.808E-08	1.740E-08	8.608E-09	5.469E-09	3.910E-09
NNW	2.909E-06	6.871E-07	2.160E-07	1.102E-07	6.882E-08	3.080E-08	1.120E-08	5.579E-09	3.563E-09	2.558E-09
N	2.182E-06	5.171E-07	1.629E-07	8.317E-08	5.200E-08	2.330E-08	8.491E-09	4.230E-09	2.701E-09	1.939E-09
NNE	2.206E-06	5.208E-07	1.669E-07	8.645E-08	5.461E-08	2.485E-08	9.265E-09	4.692E-09	3.026E-09	2.187E-09
NE	2.220E-06	5.201E-07	1.697E-07	8.931E-08	5.704E-08	2.639E-08	1.009E-08	5.198E-09	3.386E-09	2.465E-09
ENE	2.241E-06	5.273E-07	1.730E-07	9.114E-08	5.824E-08	2.695E-08	1.030E-08	5.304E-09	3.453E-09	2.513E-09
E	3.090E-06	7.241E-07	2.390E-07	1.267E-07	8.127E-08	3.785E-08	1.460E-08	7.567E-09	4.946E-09	3.610E-09
ESE	3.945E-06	9.130E-07	3.014E-07	1.608E-07	1.036E-07	4.863E-08	1.898E-08	9.924E-09	6.522E-09	4.778E-09
SE	4.905E-06	1.133E-06	3.746E-07	2.000E-07	1.290E-07	6.059E-08	2.370E-08	1.241E-08	8.164E-09	5.986E-09
SSE	9.247E-06	2.116E-06	6.983E-07	3.740E-07	2.418E-07	1.141E-07	4.492E-08	2.364E-08	1.560E-08	1.146E-08

XOQDOQ – TURKEY POINT COL (3 YEAR COMPOSITE 2002, 2005, 2006 Met Data)

Table 2.7-18 (Sheet 1 of 2)
XOQDOQ-Predicted Annual Average D/Q Values at the Standard Radial Distances and Distance-Segment Boundaries
D/Qs at Various Distances

RELEASE POINT - GROUND LEVEL - NO INTERMITTENT RELEASES
CORRECTED USING STANDARD OPEN TERRAIN FACTORS

******************** RELATIVE DEPOSITION PER UNIT AREA (M**-2) AT FIXED POINTS BY DOWNWIND SECTORS ********************

DIRECTION FROM SITE	DISTANCES IN MILES .25	.50	.75	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50
S	1.312E-07	4.436E-08	2.278E-08	1.083E-08	3.889E-09	1.929E-09	1.136E-09	7.437E-10	5.233E-10	3.878E-10	2.988E-10
SSW	5.059E-08	1.711E-08	8.784E-09	4.176E-09	1.500E-09	7.439E-10	4.380E-10	2.868E-10	2.018E-10	1.496E-10	1.153E-10
SW	1.466E-07	4.957E-08	2.545E-08	1.210E-08	4.346E-09	2.155E-09	1.269E-09	8.310E-10	5.847E-10	4.333E-10	3.339E-10
WSW	2.370E-07	8.015E-08	4.115E-08	1.956E-08	7.027E-09	3.485E-09	2.052E-09	1.344E-09	9.455E-10	7.007E-10	5.400E-10
W	4.078E-07	1.379E-07	7.081E-08	3.366E-08	1.209E-08	5.997E-09	3.531E-09	2.312E-09	1.627E-09	1.206E-09	9.291E-10
WNW	3.077E-07	1.040E-07	5.342E-08	2.540E-08	9.122E-09	4.524E-09	2.664E-09	1.744E-09	1.227E-09	9.095E-10	7.009E-10
NW	1.928E-07	6.520E-08	3.347E-08	1.591E-08	5.716E-09	2.835E-09	1.669E-09	1.093E-09	7.691E-10	5.700E-10	4.392E-10
NNW	1.380E-07	4.667E-08	2.396E-08	1.139E-08	4.092E-09	2.029E-09	1.195E-09	7.824E-10	5.505E-10	4.080E-10	3.144E-10
N	1.027E-07	3.474E-08	1.784E-08	8.480E-09	3.046E-09	1.511E-09	8.895E-10	5.824E-10	4.098E-10	3.037E-10	2.340E-10
NNE	7.283E-08	2.463E-08	1.265E-08	6.012E-09	2.160E-09	1.071E-09	6.306E-10	4.129E-10	2.905E-10	2.153E-10	1.659E-10
NE	5.551E-08	1.877E-08	9.639E-09	4.582E-09	1.646E-09	8.163E-10	4.806E-10	3.147E-10	2.215E-10	1.641E-10	1.265E-10
ENE	4.950E-08	1.674E-08	8.594E-09	4.086E-09	1.468E-09	7.278E-10	4.286E-10	2.806E-10	1.975E-10	1.463E-10	1.128E-10
E	5.807E-08	1.964E-08	1.008E-08	4.793E-09	1.722E-09	8.538E-10	5.027E-10	3.292E-10	2.316E-10	1.717E-10	1.323E-10
ESE	6.472E-08	2.189E-08	1.124E-08	5.342E-09	1.919E-09	9.517E-10	5.604E-10	3.669E-10	2.582E-10	1.913E-10	1.474E-10
SE	9.289E-08	3.141E-08	1.613E-08	7.667E-09	2.754E-09	1.366E-09	8.042E-10	5.266E-10	3.705E-10	2.746E-10	2.116E-10
SSE	2.081E-07	7.037E-08	3.613E-08	1.718E-08	6.171E-09	3.060E-09	1.802E-09	1.180E-09	8.302E-10	6.152E-10	4.741E-10

DIRECTION FROM SITE	DISTANCES IN MILES 5.00	7.50	10.00	15.00	20.00	25.00	30.00	35.00	40.00	45.00	50.00
S	2.374E-10	1.055E-10	6.389E-11	3.229E-11	1.954E-11	1.310E-11	9.390E-12	7.051E-12	5.482E-12	4.379E-12	3.574E-12
SSW	9.157E-11	4.068E-11	2.464E-11	1.245E-11	7.538E-12	5.054E-12	3.622E-12	2.719E-12	2.114E-12	1.689E-12	1.379E-12
SW	2.653E-10	1.179E-10	7.139E-11	3.608E-11	2.184E-11	1.464E-11	1.049E-11	7.879E-12	6.126E-12	4.893E-12	3.994E-12
WSW	4.290E-10	1.906E-10	1.154E-10	5.835E-11	3.531E-11	2.368E-11	1.697E-11	1.274E-11	9.905E-12	7.912E-12	6.458E-12
W	7.381E-10	3.279E-10	1.986E-10	1.004E-10	6.077E-11	4.074E-11	2.919E-11	2.192E-11	1.704E-11	1.362E-11	1.111E-11
WNW	5.568E-10	2.474E-10	1.498E-10	7.574E-11	4.584E-11	3.073E-11	2.202E-11	1.654E-11	1.286E-11	1.027E-11	8.383E-12
NW	3.489E-10	1.550E-10	9.390E-11	4.746E-11	2.873E-11	1.926E-11	1.380E-11	1.036E-11	8.058E-12	6.436E-12	5.254E-12
NNW	2.498E-10	1.110E-10	6.722E-11	3.397E-11	2.056E-11	1.379E-11	9.879E-12	7.418E-12	5.768E-12	4.607E-12	3.761E-12
N	1.859E-10	8.260E-11	5.004E-11	2.529E-11	1.531E-11	1.026E-11	7.354E-12	5.522E-12	4.294E-12	3.430E-12	2.799E-12
NNE	1.318E-10	5.856E-11	3.547E-11	1.793E-11	1.085E-11	7.276E-12	5.214E-12	3.915E-12	3.044E-12	2.432E-12	1.985E-12
NE	1.005E-10	4.464E-11	2.704E-11	1.367E-11	8.272E-12	5.546E-12	3.974E-12	2.984E-12	2.320E-12	1.853E-12	1.513E-12
ENE	8.959E-11	3.980E-11	2.411E-11	1.219E-11	7.375E-12	4.945E-12	3.543E-12	2.661E-12	2.069E-12	1.652E-12	1.349E-12
E	1.051E-10	4.669E-11	2.828E-11	1.429E-11	8.652E-12	5.801E-12	4.157E-12	3.121E-12	2.427E-12	1.939E-12	1.582E-12
ESE	1.171E-10	5.204E-11	3.152E-11	1.593E-11	9.643E-12	6.466E-12	4.633E-12	3.479E-12	2.705E-12	2.161E-12	1.764E-12
SE	1.681E-10	7.468E-11	4.524E-11	2.287E-11	1.384E-11	9.280E-12	6.649E-12	4.993E-12	3.882E-12	3.101E-12	2.531E-12
SSE	3.767E-10	1.673E-10	1.014E-10	5.123E-11	3.101E-11	2.079E-11	1.490E-11	1.119E-11	8.698E-12	6.948E-12	5.671E-12

USNRC COMPUTER CODE - XOQDOQ, VERSION 2.0
XOQDOQ - TURKEY POINT COL (3 YEAR COMPOSITE 2002, 2005, 2006 Met Data)

Table 2.7-18 (Sheet 2 of 2)
XOQDOQ-Predicted Annual Average D/Q Values at the Standard Radial Distances and Distance-Segment Boundaries
D/Qs at Various Distances

RELEASE POINT - GROUND LEVEL - NO INTERMITTENT RELEASES

************************ RELATIVE DEPOSITION PER UNIT AREA (M**-2) BY DOWNWIND SECTORS ************************

SEGMENT BOUNDARIES IN MILES

DIRECTION FROM SITE	.5-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
S	2.226E-08	4.560E-09	1.190E-09	5.346E-10	3.024E-10	1.163E-10	3.365E-11	1.334E-11	7.122E-12	4.408E-1
SSW	8.586E-09	1.759E-09	4.591E-10	2.062E-10	1.166E-10	4.486E-11	1.298E-11	5.143E-12	2.747E-12	1.700E-1
SW	2.488E-08	5.095E-09	1.330E-09	5.974E-10	3.380E-10	1.300E-10	3.760E-11	1.490E-11	7.958E-12	4.926E-1
WSW	4.022E-08	8.239E-09	2.151E-09	9.660E-10	5.465E-10	2.101E-10	6.080E-11	2.410E-11	1.287E-11	7.964E-1
W	6.921E-08	1.418E-08	3.701E-09	1.662E-09	9.403E-10	3.616E-10	1.046E-10	4.146E-11	2.214E-11	1.370E-1
WNW	5.221E-08	1.069E-08	2.792E-09	1.254E-09	7.094E-10	2.728E-10	7.892E-11	3.128E-11	1.670E-11	1.034E-1
NW	3.272E-08	6.702E-09	1.750E-09	7.858E-10	4.445E-10	1.709E-10	4.945E-11	1.960E-11	1.047E-11	6.479E-1
NNW	2.342E-08	4.798E-09	1.252E-09	5.625E-10	3.182E-10	1.224E-10	3.540E-11	1.403E-11	7.493E-12	4.638E-1
N	1.743E-08	3.571E-09	9.323E-10	4.187E-10	2.369E-10	9.109E-11	2.635E-11	1.044E-11	5.577E-12	3.452E-1
NNE	1.236E-08	2.532E-09	6.610E-10	2.969E-10	1.679E-10	6.458E-11	1.868E-11	7.405E-12	3.954E-12	2.447E-1
NE	9.421E-09	1.930E-09	5.038E-10	2.263E-10	1.280E-10	4.922E-11	1.424E-11	5.644E-12	3.014E-12	1.865E-1
ENE	8.400E-09	1.721E-09	4.492E-10	2.017E-10	1.141E-10	4.389E-11	1.270E-11	5.032E-12	2.687E-12	1.663E-1
E	9.854E-09	2.019E-09	5.269E-10	2.367E-10	1.339E-10	5.149E-11	1.489E-11	5.903E-12	3.152E-12	1.951E-1
ESE	1.098E-08	2.250E-09	5.873E-10	2.638E-10	1.492E-10	5.739E-11	1.660E-11	6.580E-12	3.514E-12	2.175E-1
SE	1.576E-08	3.229E-09	8.430E-10	3.786E-10	2.142E-10	8.236E-11	2.383E-11	9.444E-12	5.043E-12	3.121E-1
SSE	3.532E-08	7.234E-09	1.889E-09	8.482E-10	4.798E-10	1.845E-10	5.338E-11	2.116E-11	1.130E-11	6.993E-12

0VENT AND BUILDING PARAMETERS:

RELEASE HEIGHT	(METERS)	.00	REP. WIND HEIGHT	(METERS)	10.0
DIAMETER	(METERS)	.00	BUILDING HEIGHT	(METERS)	69.7
EXIT VELOCITY	(METERS)	.00	BLDG.MIN.CRS.SEC.AREA	(SQ.METERS)	2636.0
			HEAT EMISSION RATE	(CAL/SEC)	.0

ALL GROUND LEVEL RELEASES.
XOQDOQ - TURKEY POINT COL (3 YEAR COMPOSITE 2002, 2005, 2006 Met Data)

Table 2.7-19
XOQDOQ-Predicted Annual X/Qs and D/Qs at Sensitive Receptors

RELEASE POINT - GROUND LEVEL - NO INTERMITTENT RELEASES
CORRECTED USING STANDARD OPEN TERRAIN FACTORS
SPECIFIC POINTS OF INTEREST

0RELEASE ID	TYPE OF LOCATION	DIRECTION FROM SITE	DISTANCE (MILES)	DISTANCE (METERS)	X/Q (SEC/CUB.METER) NO DECAY UNDEPLETED	X/Q (SEC/CUB.METER) 2.260 DAY DECAY UNDEPLETED	X/Q (SEC/CUB.METER) 8.000 DAY DECAY DEPLETED	D/Q (PER SQ.METER)
A	Residential	NW	3.97	6388.	1.3E-07	1.3E-07	1.0E-07	5.8E-10
A	Residential	NNW	5.06	8145.	5.5E-08	5.4E-08	4.1E-08	2.4E-10
A	Residential	N	2.69	4333.	1.4E-07	1.3E-07	1.1E-07	7.5E-10
A	Vegetable	NW	4.78	7692.	9.6E-08	9.4E-08	7.2E-08	3.8E-10
A	Vegetable	NNW	5.06	8145.	5.5E-08	5.4E-08	4.1E-08	2.4E-10
A	UNIT 7	W	.13	215.	1.6E-04	1.6E-04	1.5E-04	1.0E-06
A	School	NW	1.99	3198.	5.2E-07	5.2E-07	4.3E-07	2.9E-09
A	EAB	S	.52	840.	1.0E-05	1.0E-05	9.1E-06	4.1E-08
A	EAB	SSW	.51	819.	3.2E-06	3.2E-06	2.9E-06	1.7E-08
A	EAB	SW	.45	724.	6.3E-06	6.3E-06	5.8E-06	5.9E-08
A	EAB	WSW	.48	780.	9.4E-06	9.3E-06	8.6E-06	8.4E-08
A	EAB	W	.49	782.	1.7E-05	1.7E-05	1.6E-05	1.4E-07
A	EAB	WNW	.49	789.	1.2E-05	1.2E-05	1.1E-05	1.1E-07
A	EAB	NW	.48	766.	8.9E-06	8.9E-06	8.2E-06	7.1E-08
A	EAB	NNW	.48	767.	6.0E-06	6.0E-06	5.5E-06	5.0E-08
A	EAB	N	.48	767.	4.5E-06	4.5E-06	4.1E-06	3.8E-08
A	EAB	NNE	.48	767.	4.6E-06	4.6E-06	4.2E-06	2.7E-08
A	EAB	NE	.27	435.	1.2E-05	1.2E-05	1.2E-05	4.9E-08
A	EAB	ENE	.28	458.	1.1E-05	1.1E-05	1.1E-05	4.1E-08
A	EAB	E	.30	479.	1.5E-05	1.5E-05	1.4E-05	4.5E-08
A	EAB	ESE	.37	589.	1.3E-05	1.3E-05	1.2E-05	3.6E-08
A	EAB	SE	.36	586.	1.7E-05	1.7E-05	1.6E-05	5.2E-08
A	EAB	SSE	.53	848.	1.7E-05	1.7E-05	1.5E-05	6.5E-08
A	Prop Line	S	.36	577.	1.9E-05	1.9E-05	1.8E-05	7.5E-08
A	Prop Line	SSW	2.72	4373.	1.1E-07	1.1E-07	8.6E-08	3.6E-10
A	Prop Line	SW	1.50	2409.	6.0E-07	5.9E-07	5.1E-07	4.4E-09
A	Prop Line	WSW	1.36	2195.	1.3E-06	1.3E-06	1.1E-06	8.9E-09
A	Prop Line	W	1.35	2173.	2.4E-06	2.4E-06	2.1E-06	1.6E-08
A	Prop Line	WNW	2.83	4560.	3.6E-07	3.6E-07	2.9E-07	2.0E-09
A	Prop Line	NW	1.64	2641.	7.8E-07	7.7E-07	6.6E-07	4.6E-09
A	Prop Line	NNW	1.51	2430.	6.0E-07	6.0E-07	5.1E-07	4.0E-09
A	Prop Line	N	1.12	1797.	8.9E-07	8.8E-07	7.7E-07	6.4E-09
A	Prop Line	NNE	1.10	1773.	9.2E-07	9.1E-07	8.0E-07	4.7E-09
A	Prop Line	NE	.39	624.	6.7E-06	6.6E-06	6.2E-06	2.8E-08
A	Prop Line	ENE	.40	647.	6.3E-06	6.3E-06	5.8E-06	2.4E-08
A	Prop Line	E	.39	635.	9.1E-06	9.1E-06	8.4E-06	2.9E-08
A	Prop Line	ESE	.43	688.	1.0E-05	1.0E-05	9.4E-06	2.8E-08
A	Prop Line	SE	.37	595.	1.6E-05	1.6E-05	1.5E-05	5.1E-08
A	Prop Line	SSE	.35	564.	3.4E-05	3.4E-05	3.2E-05	1.2E-07

0VENT AND BUILDING PARAMETERS:

RELEASE HEIGHT	(METERS)	.00	REP. WIND HEIGHT	(METERS)	10.0
DIAMETER	(METERS)	.00	BUILDING HEIGHT	(METERS)	60.9
EXIT VELOCITY	(METERS)	.00	BLDG.MIN.CRS.SEC.AREA	(SQ.METERS)	2636.0
			HEAT EMISSION RATE	(CAL/SEC)	.0

Figure 2.7-1 Climatological Observing Stations Near Units 6 & 7

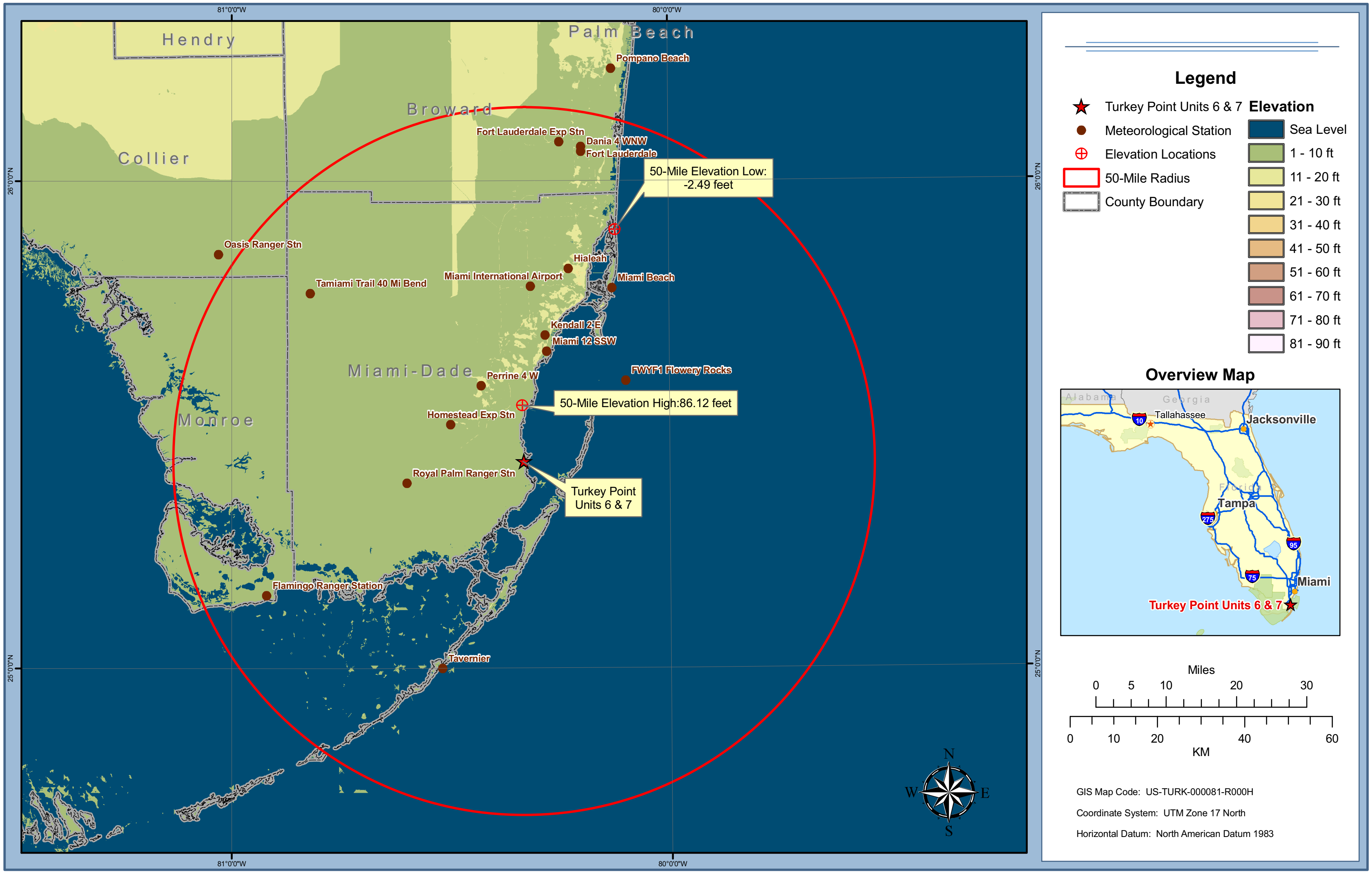


Figure 2.7-2 10-Meter Level 3-Year Composite Wind Rose — Annual (2002, 2005, and 2006)

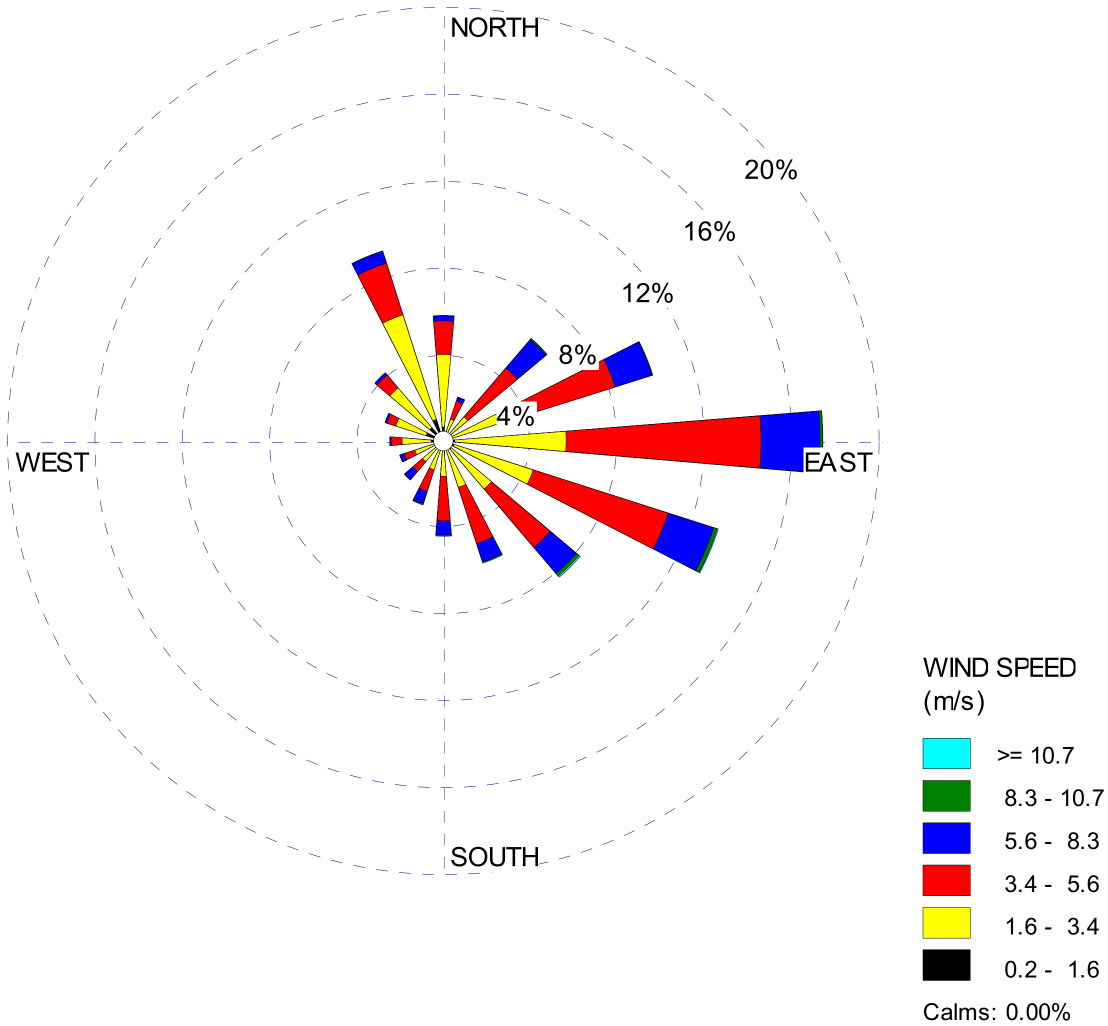


Figure 2.7-3 10-Meter Level 3-Year Composite Wind Rose — Winter (2002, 2005, and 2006)

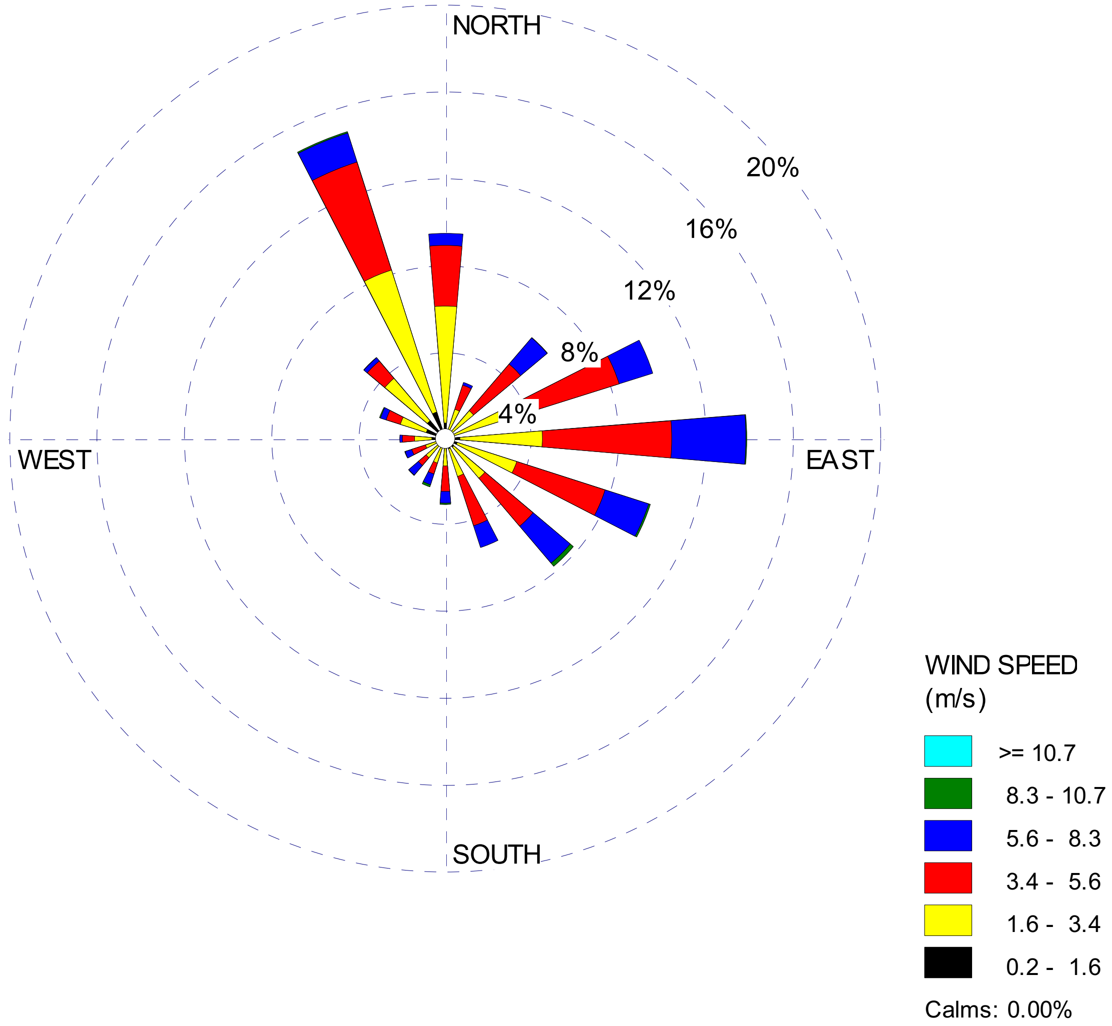


Figure 2.7-4 10-Meter Level 3-Year Composite Wind Rose — Spring (2002, 2005, and 2006)

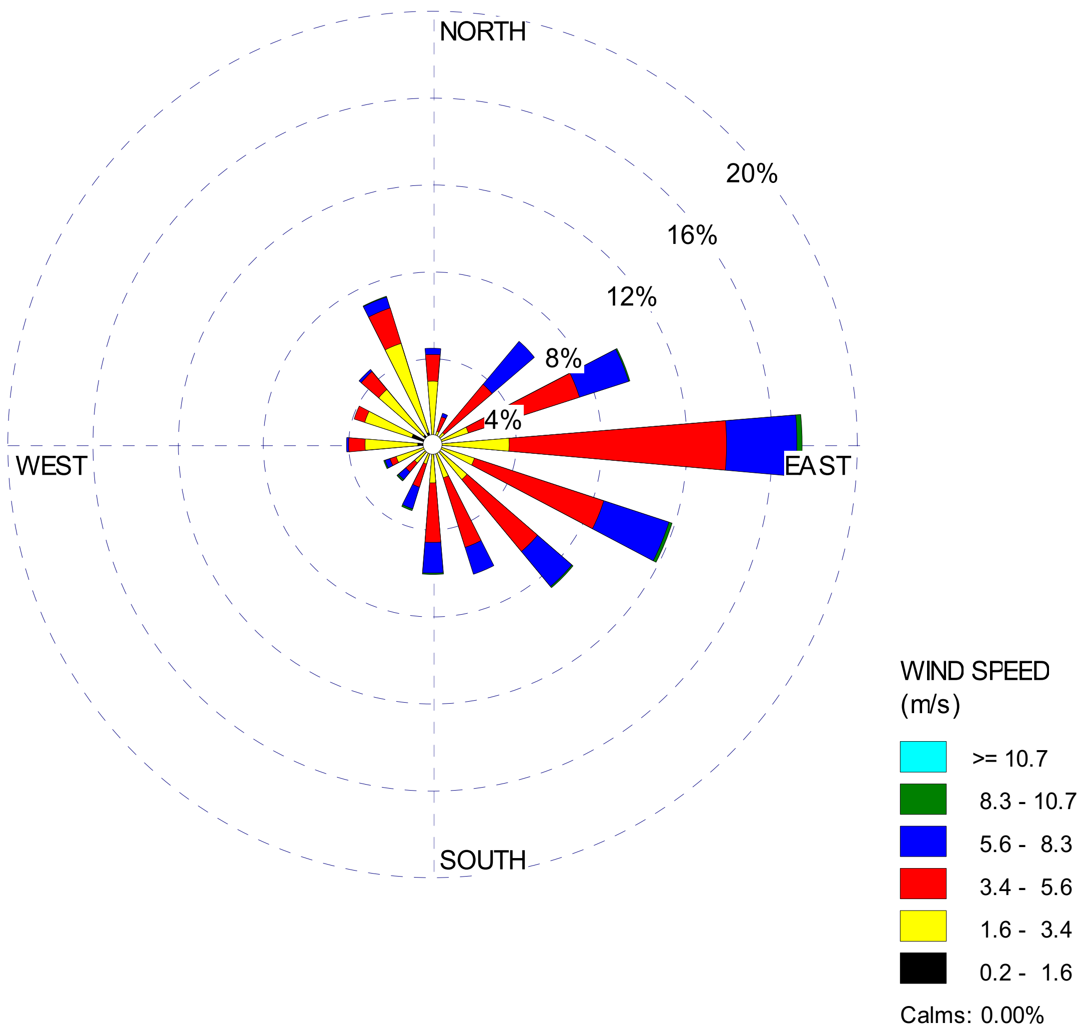


Figure 2.7-5 10-Meter Level 3-Year Composite Wind Rose — Summer (2002, 2005, and 2006)

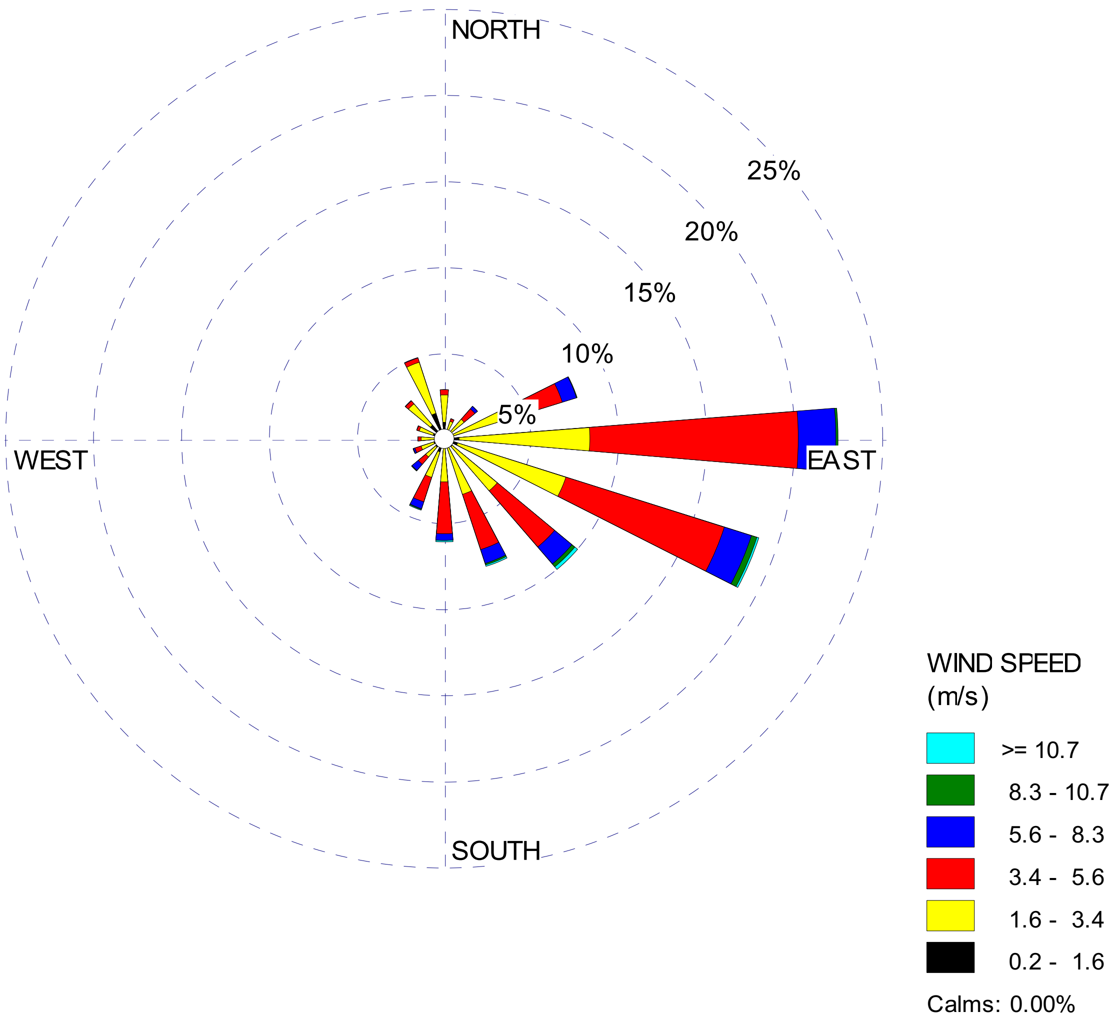


Figure 2.7-6 10-Meter Level 3-Year Composite Wind Rose — Fall (2002, 2005, and 2006)

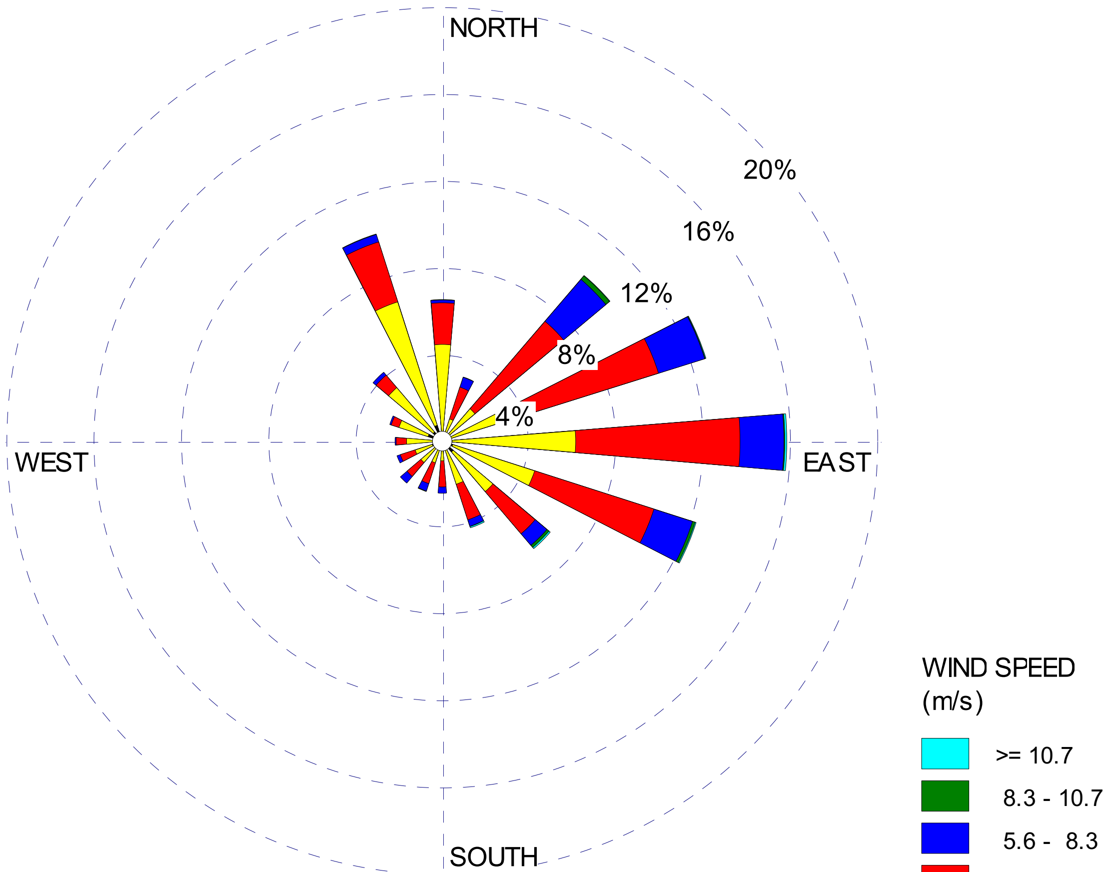


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — January (2002, 2005, and 2006) (Sheet 1 of 12)

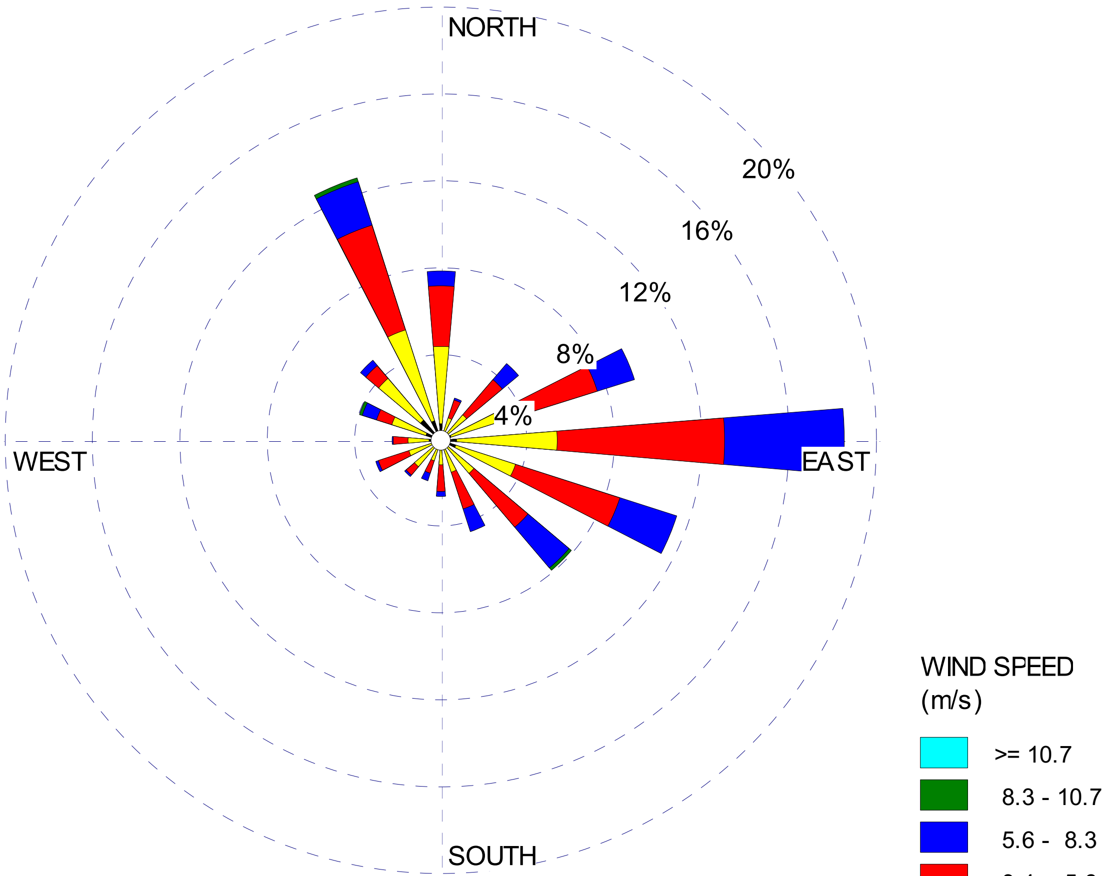


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — February (2002, 2005, and 2006) (Sheet 2 of 12)

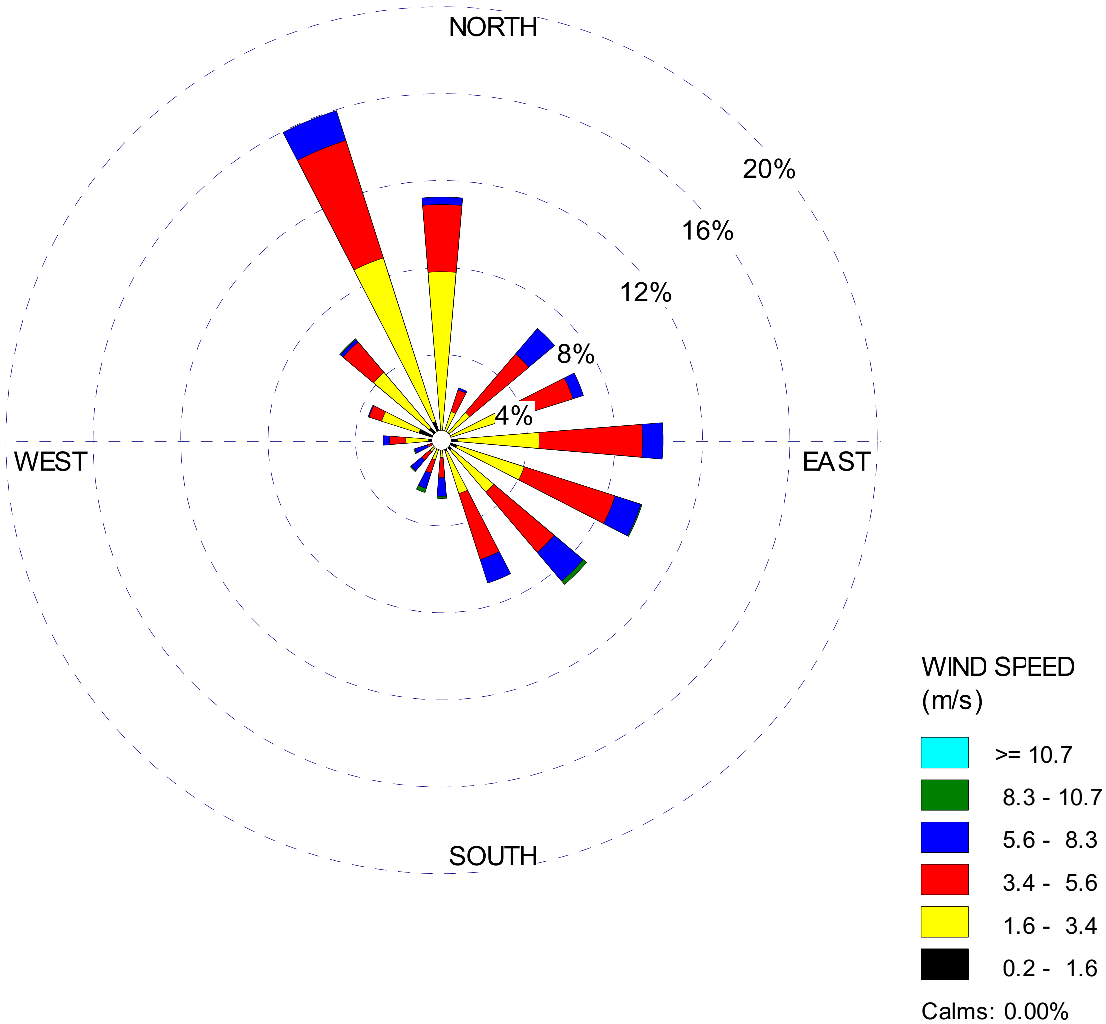


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — March (2002, 2005, and 2006) (Sheet 3 of 12)

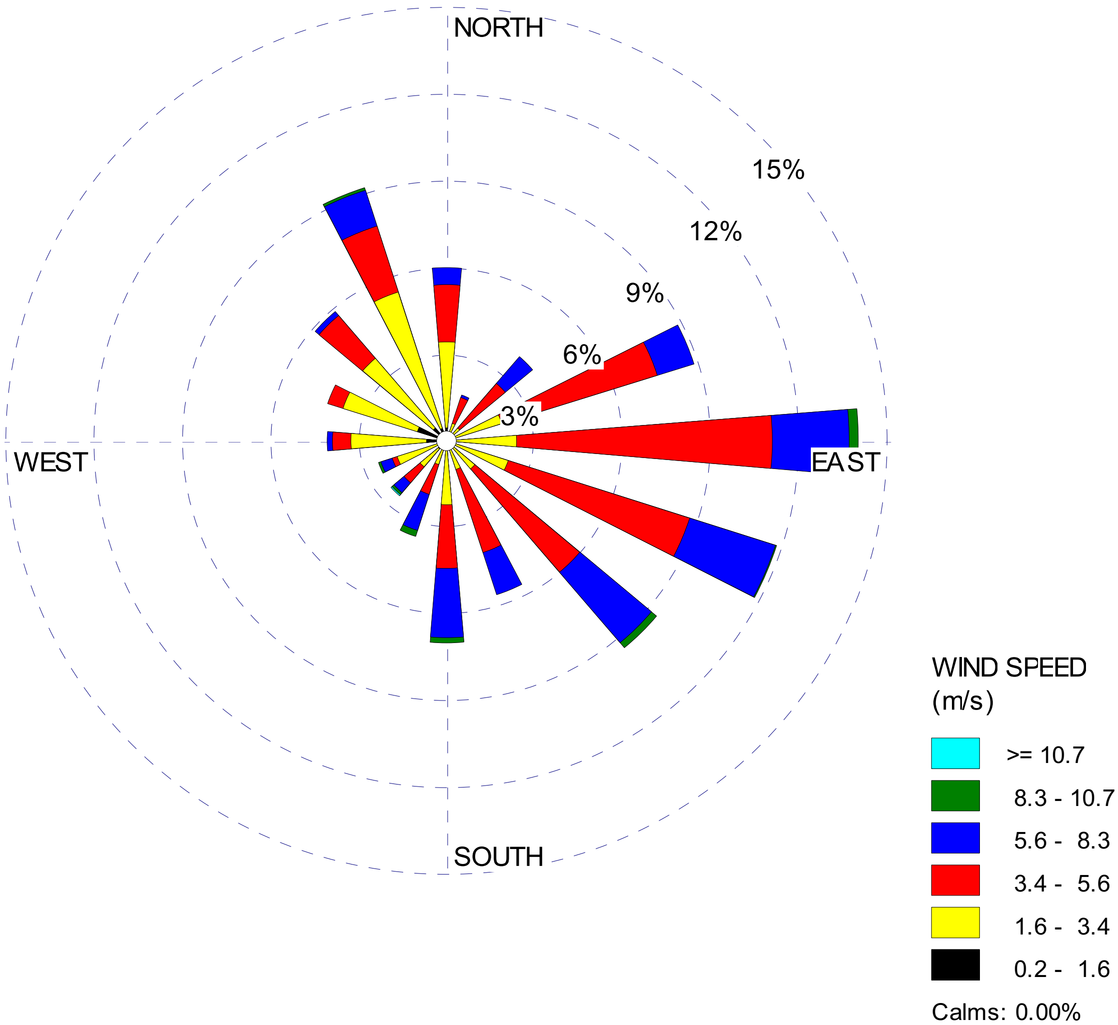


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — April (2002, 2005, and 2006) (Sheet 4 of 12)

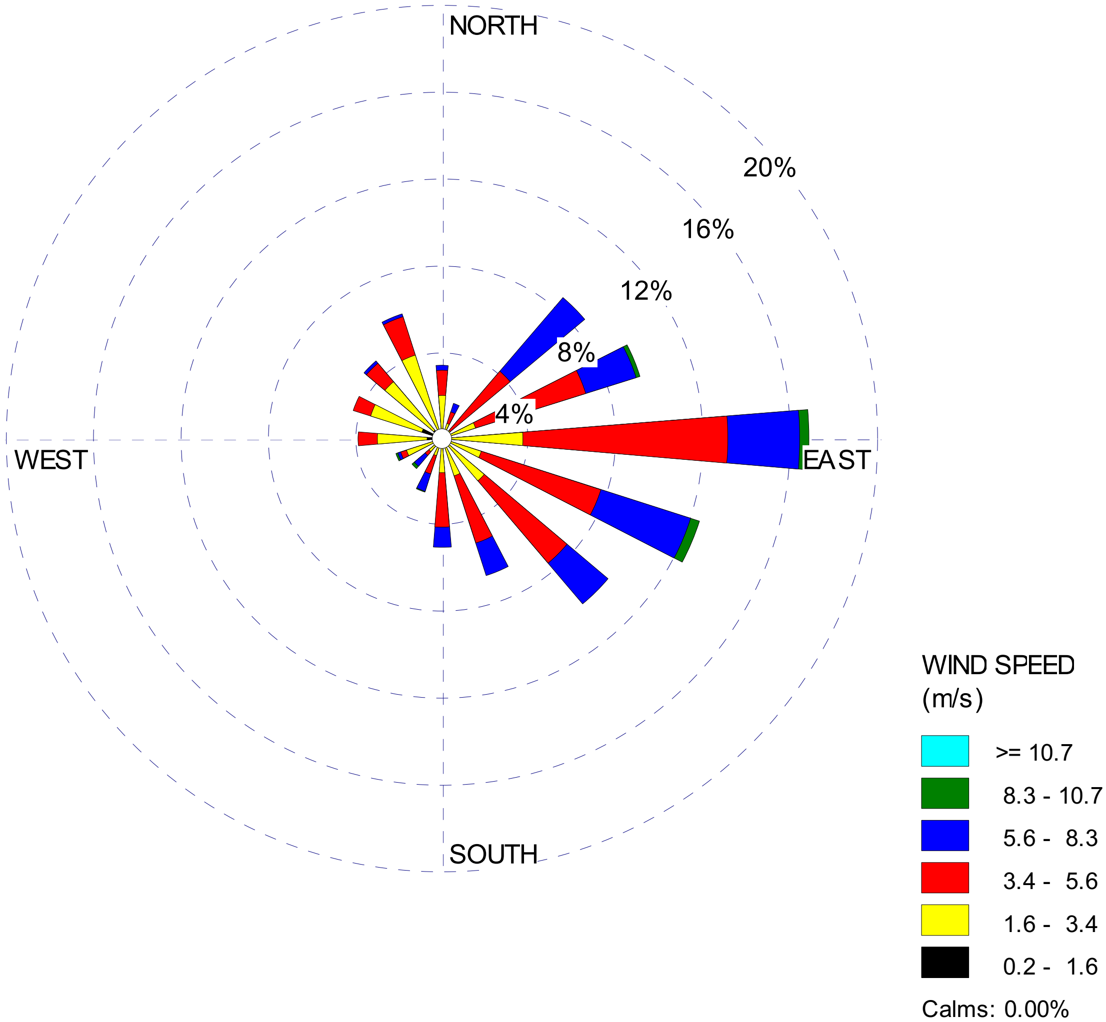


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — May (2002, 2005, and 2006) (Sheet 5 of 12)

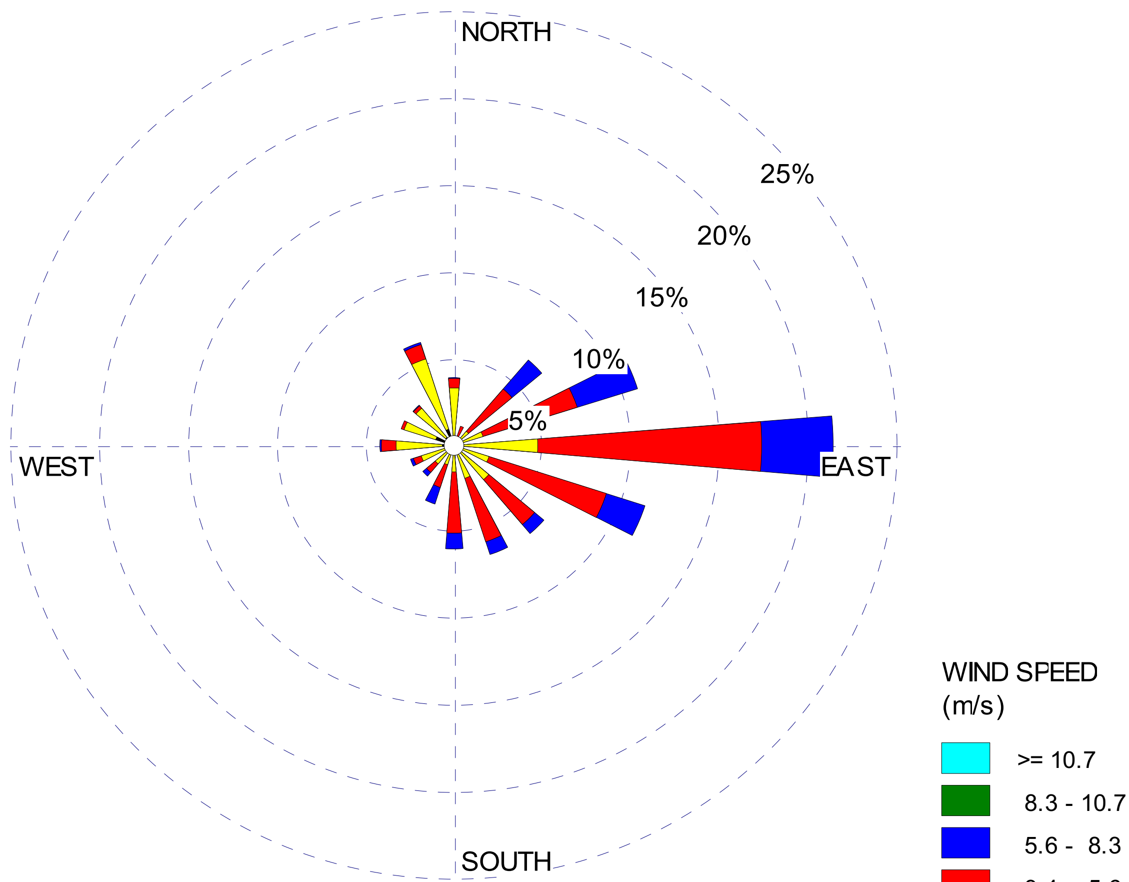


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — June (2002, 2005, and 2006) (Sheet 6 of 12)

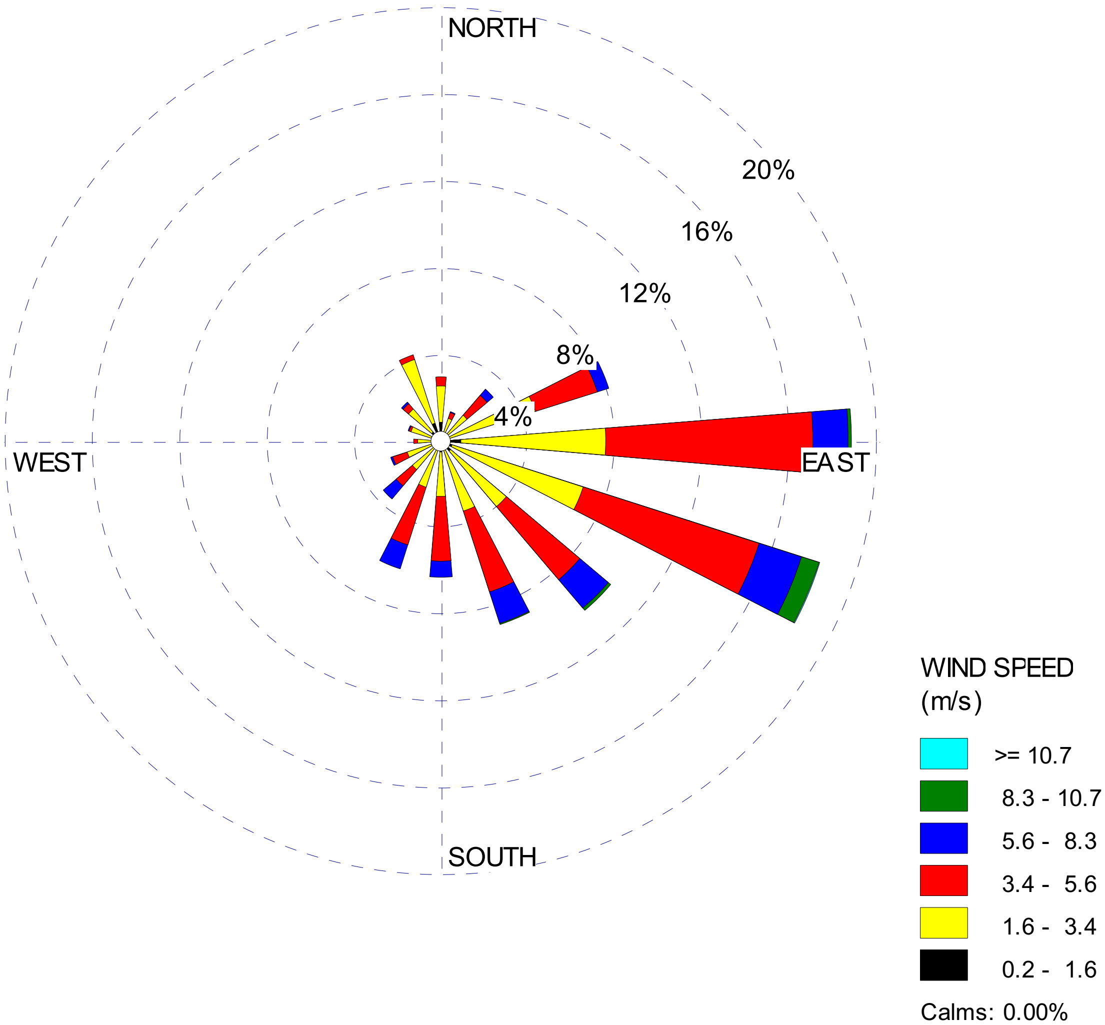


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — July (2002, 2005, and 2006) (Sheet 7 of 12)

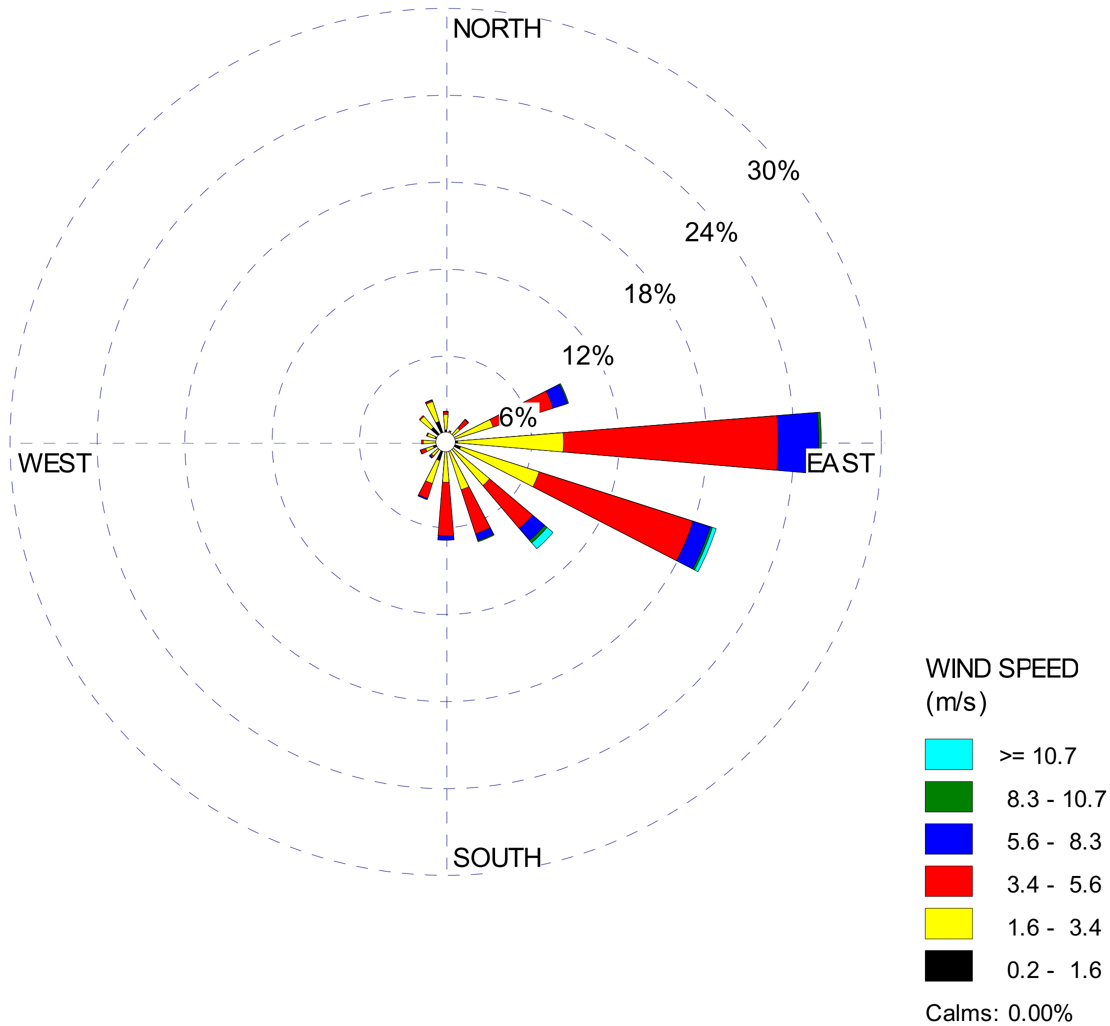


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — August (2002, 2005, and 2006) (Sheet 8 of 12)

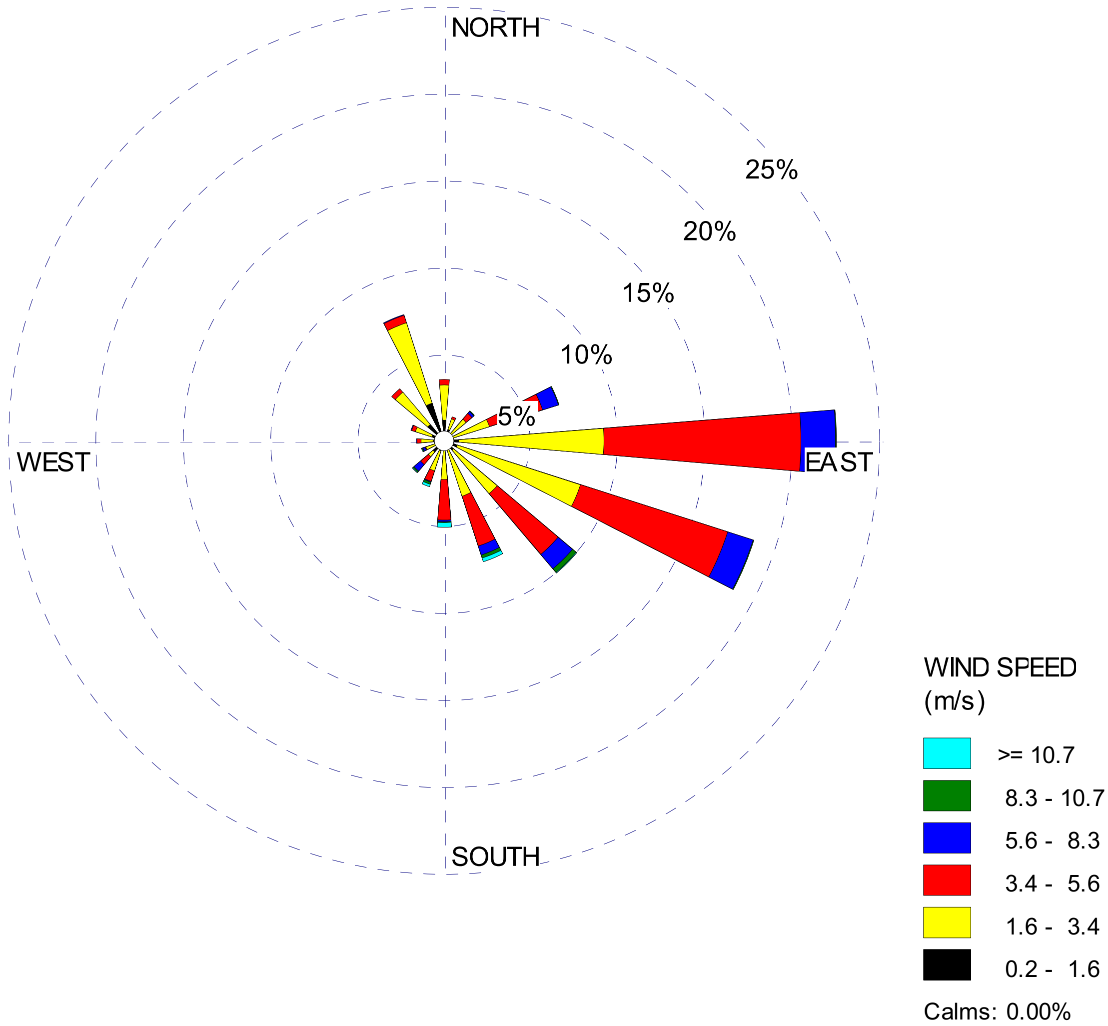


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — September (2002, 2005, and 2006) (Sheet 9 of 12)

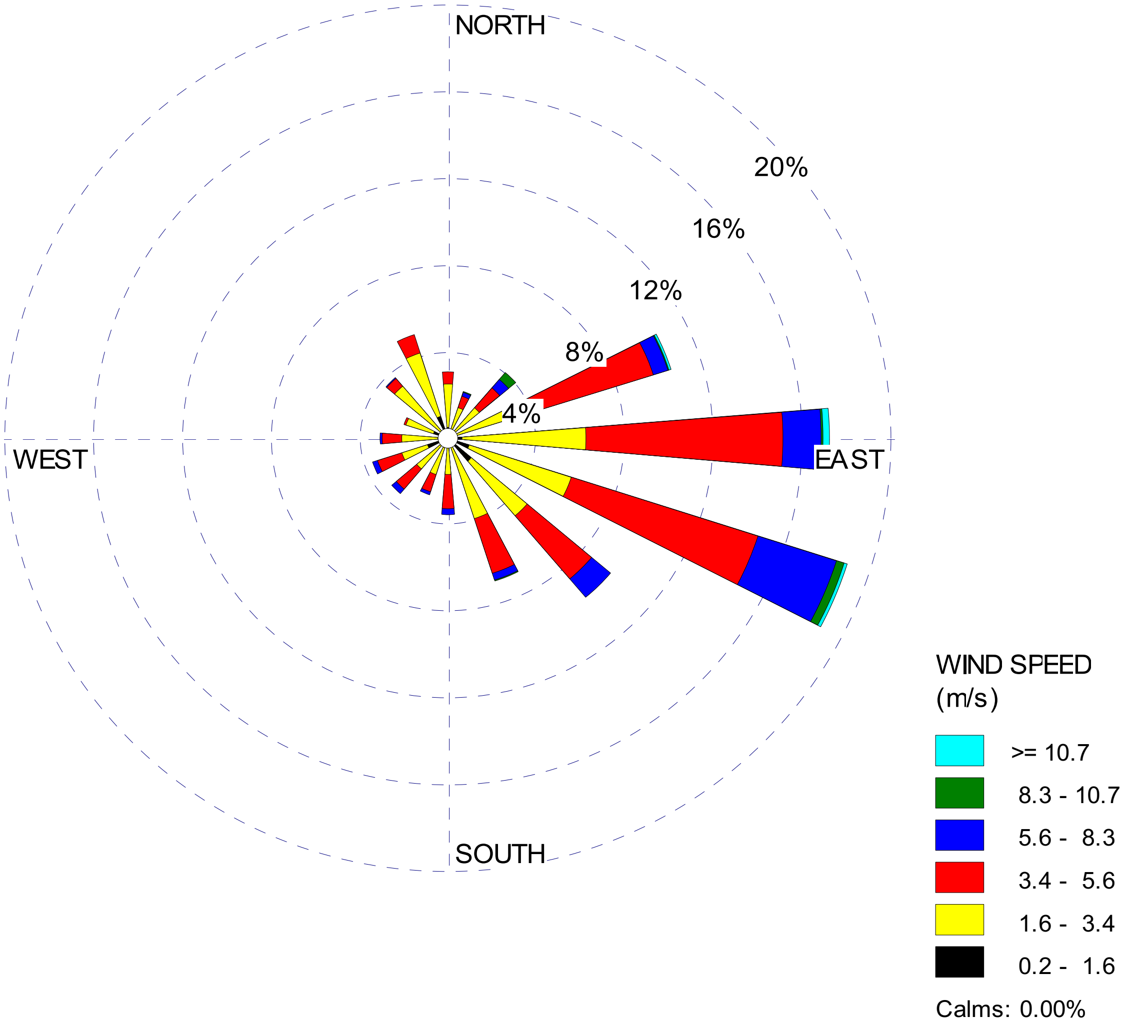


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — October (2002, 2005, and 2006) (Sheet 10 of 12)

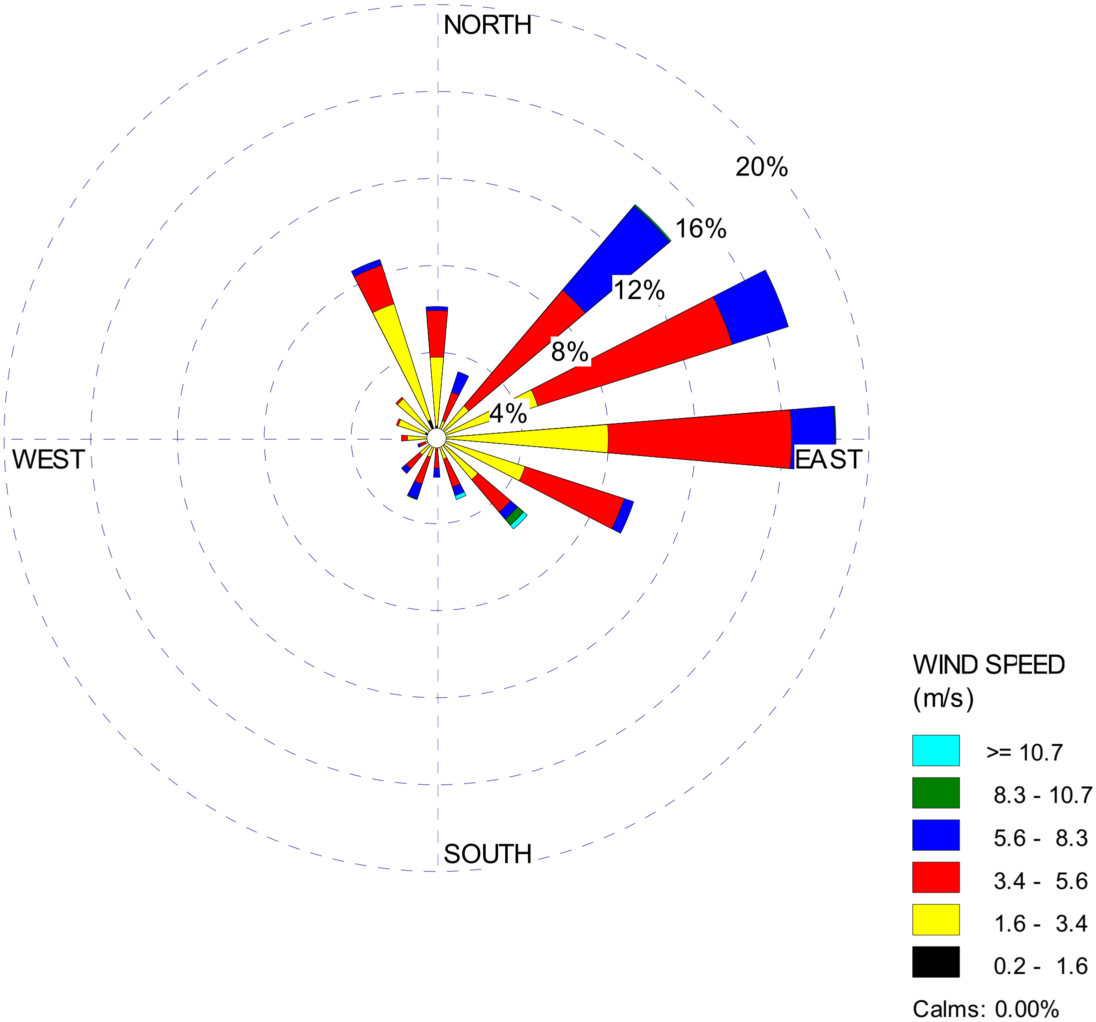


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — November (2002, 2005, and 2006) (Sheet 11 of 12)

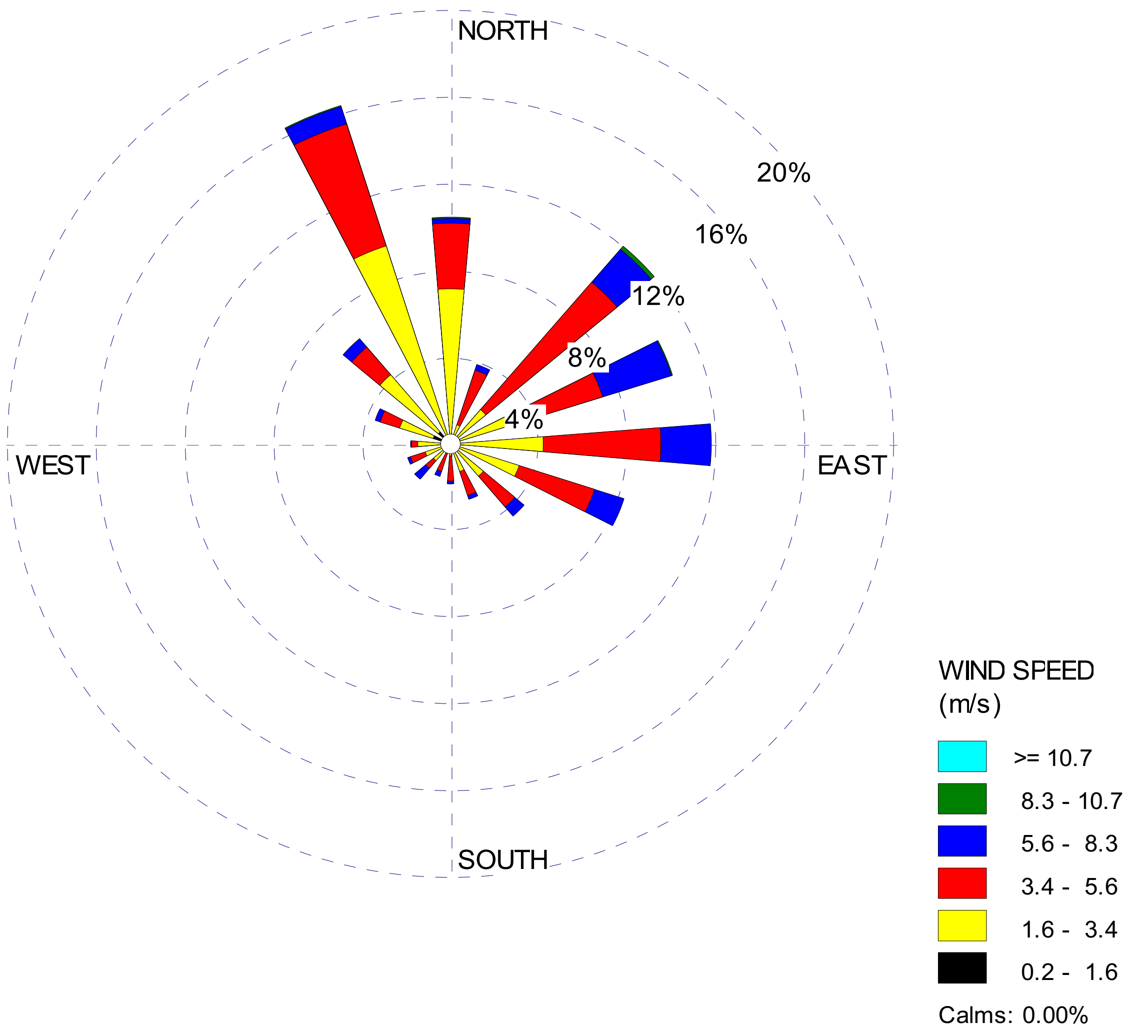


Figure 2.7-7 10-Meter Level 3-Year Composite Wind Rose — December (2002, 2005, and 2006) (Sheet 12 of 12)

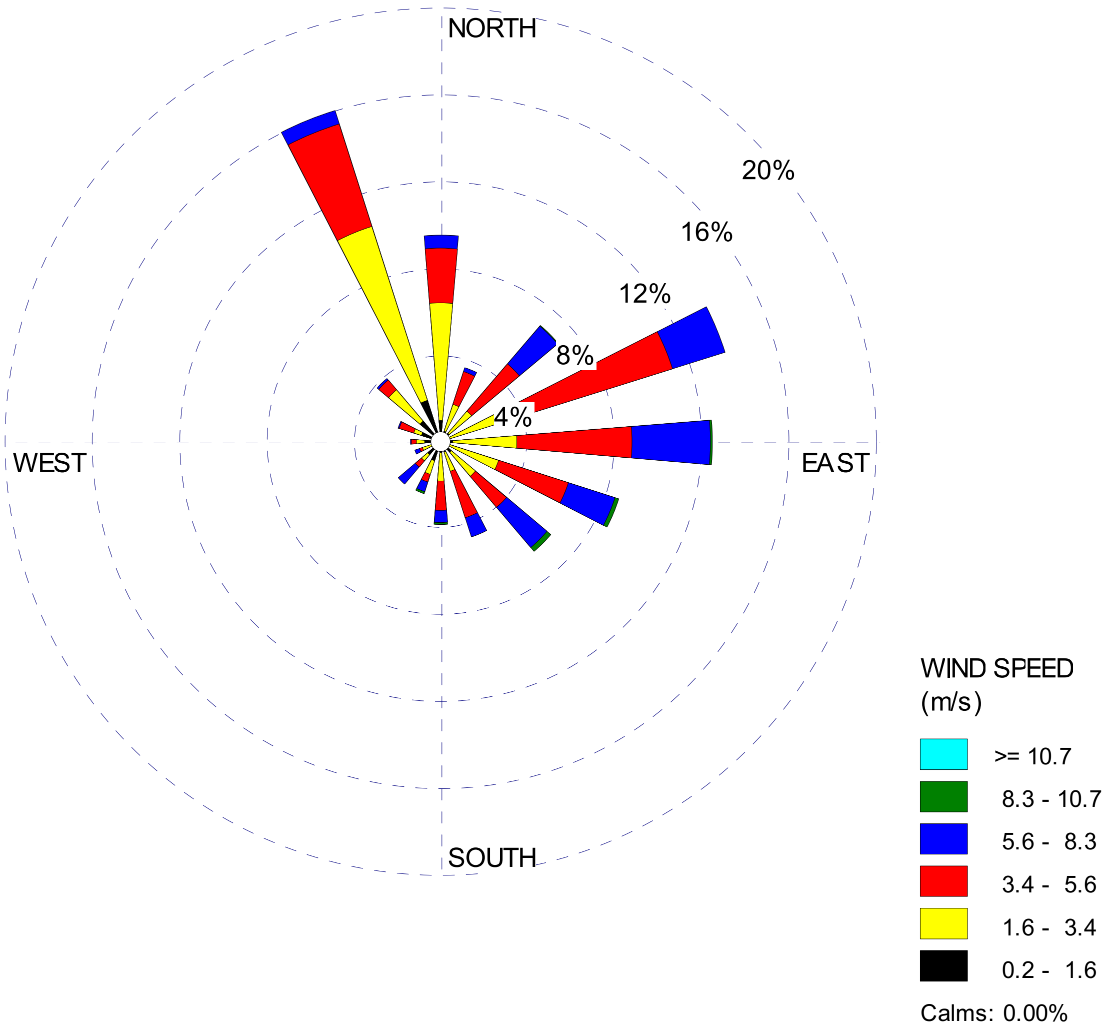


Figure 2.7-8 60-Meter Level 3-Year Composite Wind — Annual (2002, 2005, and 2006)

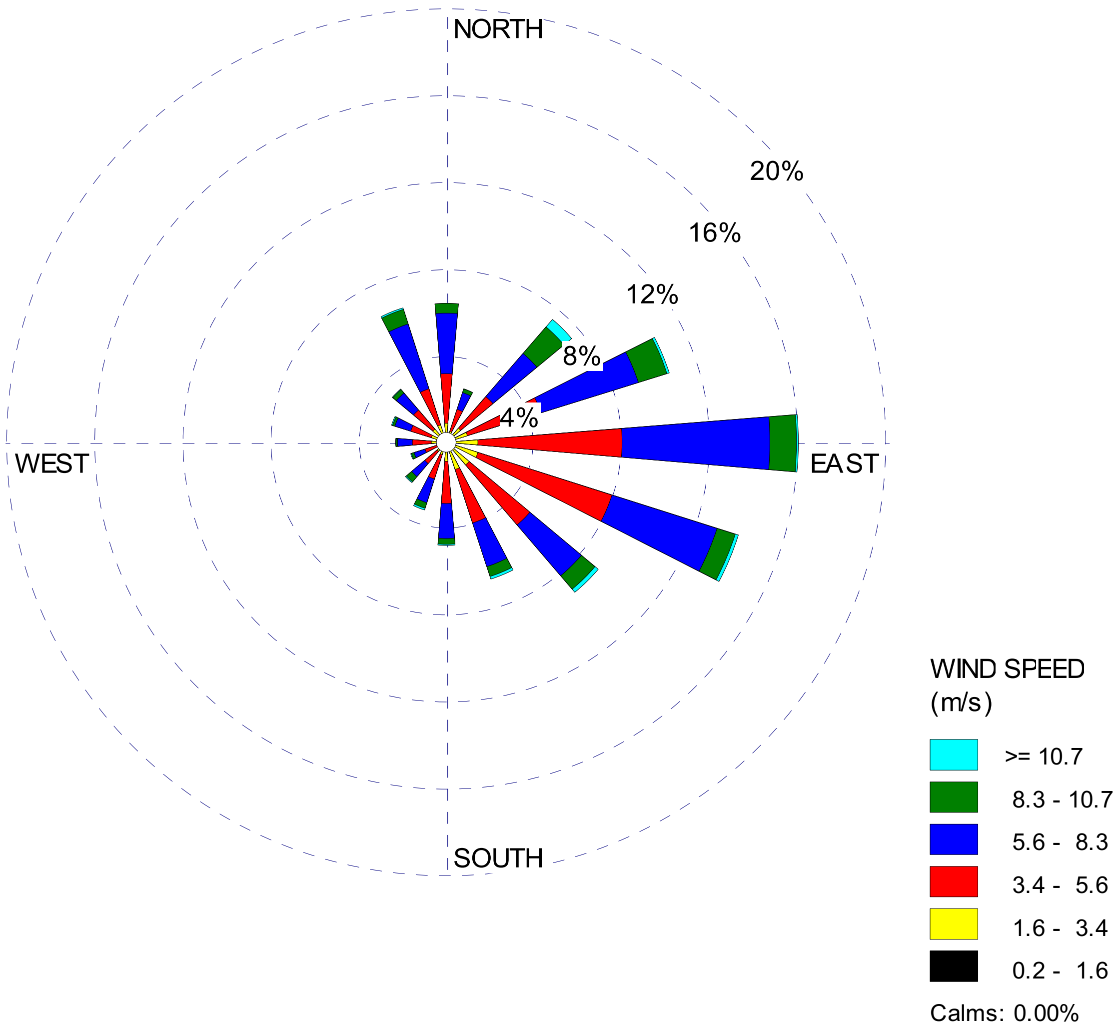


Figure 2.7-9 60-Meter Level 3-Year Composite Wind Rose — Winter (2002, 2005, and 2006)

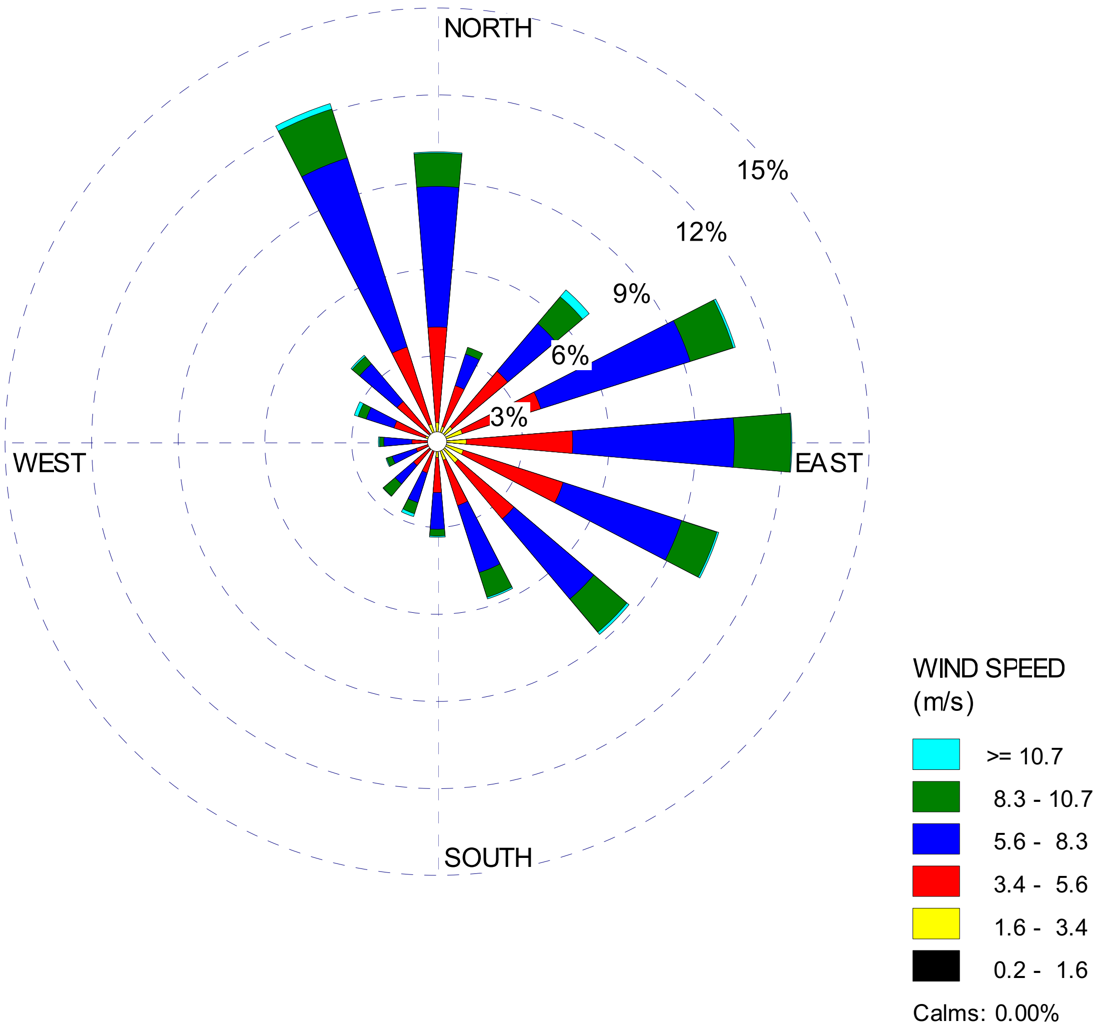


Figure 2.7-10 60-Meter Level 3-Year Composite Wind Rose — Spring (2002, 2005, and 2006)

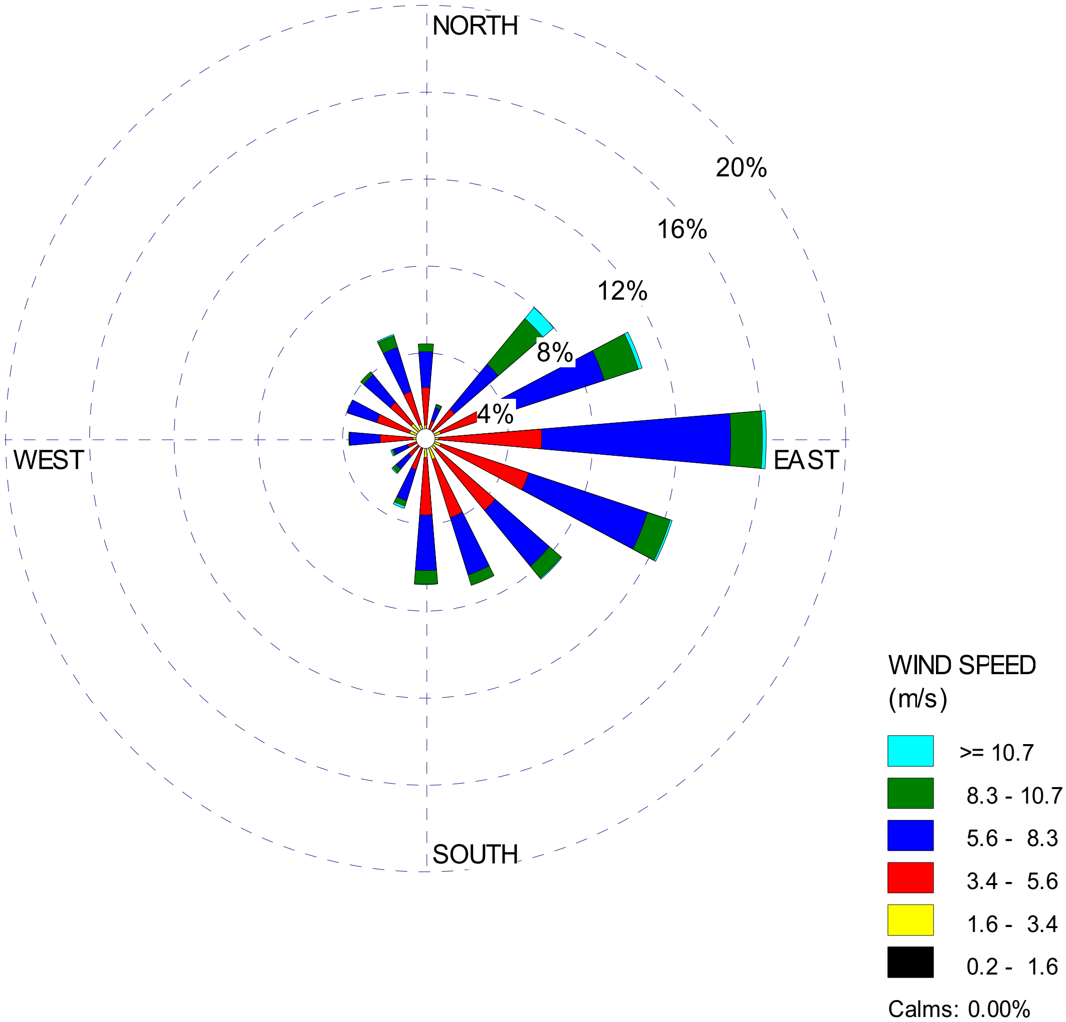


Figure 2.7-11 60-Meter Level 3-Year Composite Wind Rose — Summer (2002, 2005, and 2006)

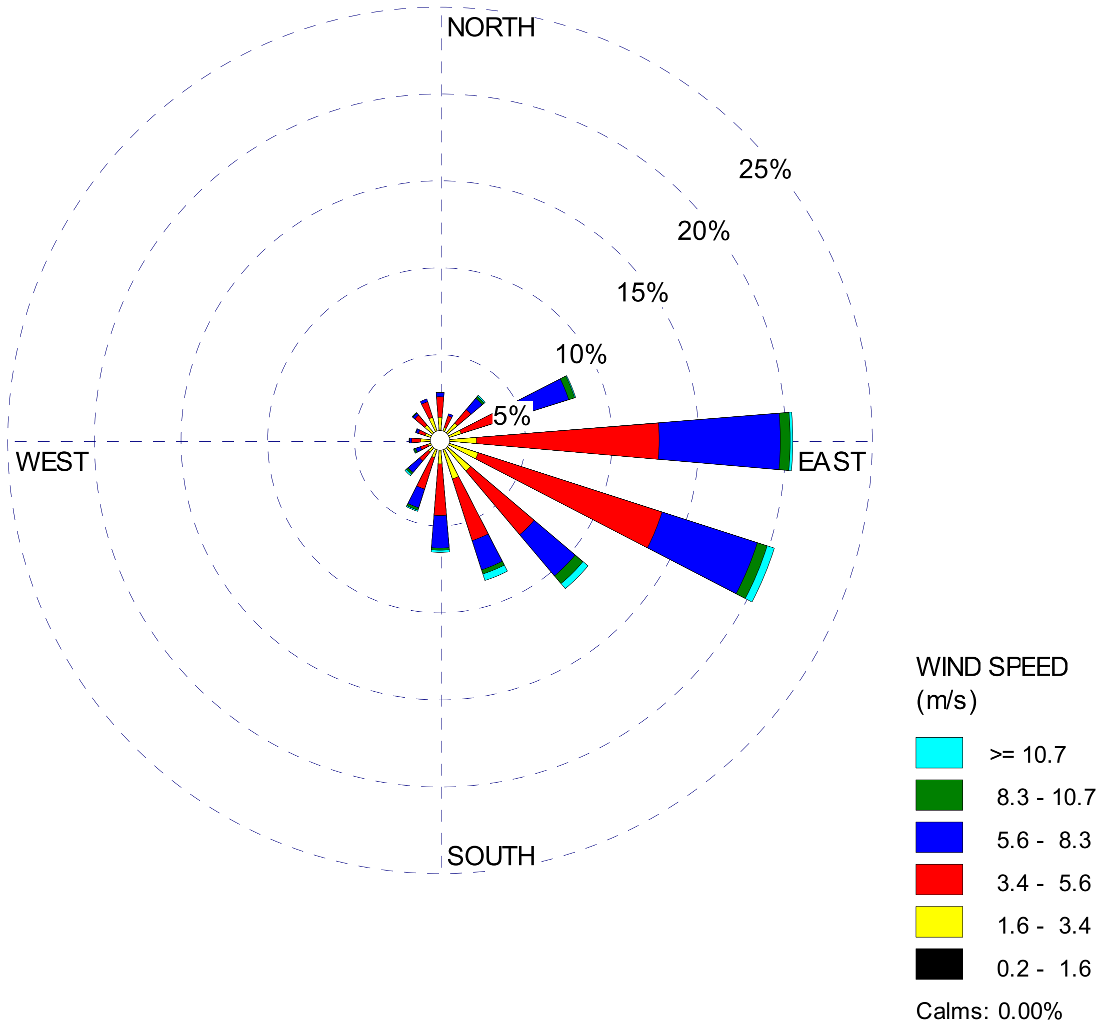


Figure 2.7-12 60-Meter Level 3-Year Composite Wind Rose — Fall (2002, 2005, and 2006)

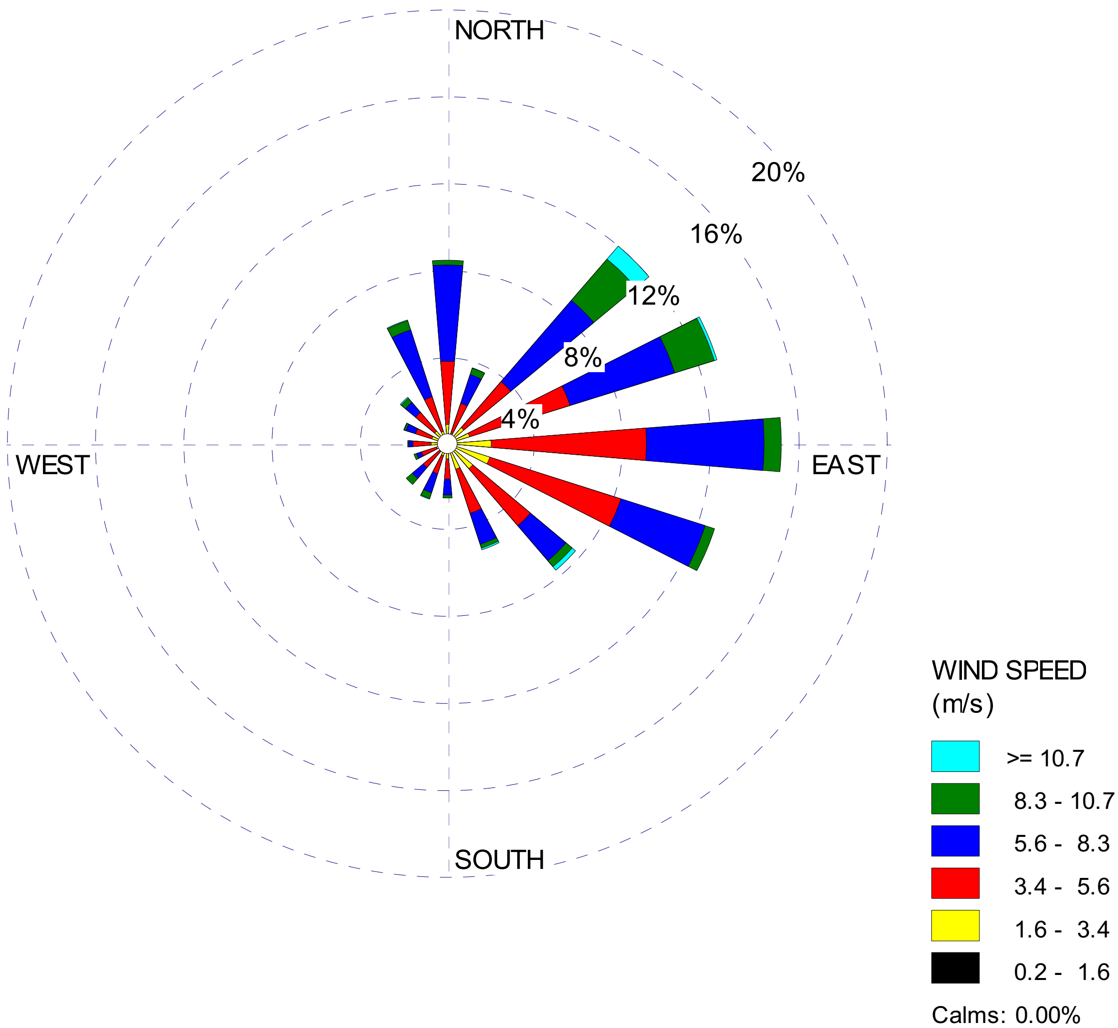


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — January (2002, 2005, and 2006) (Sheet 1 of 12)

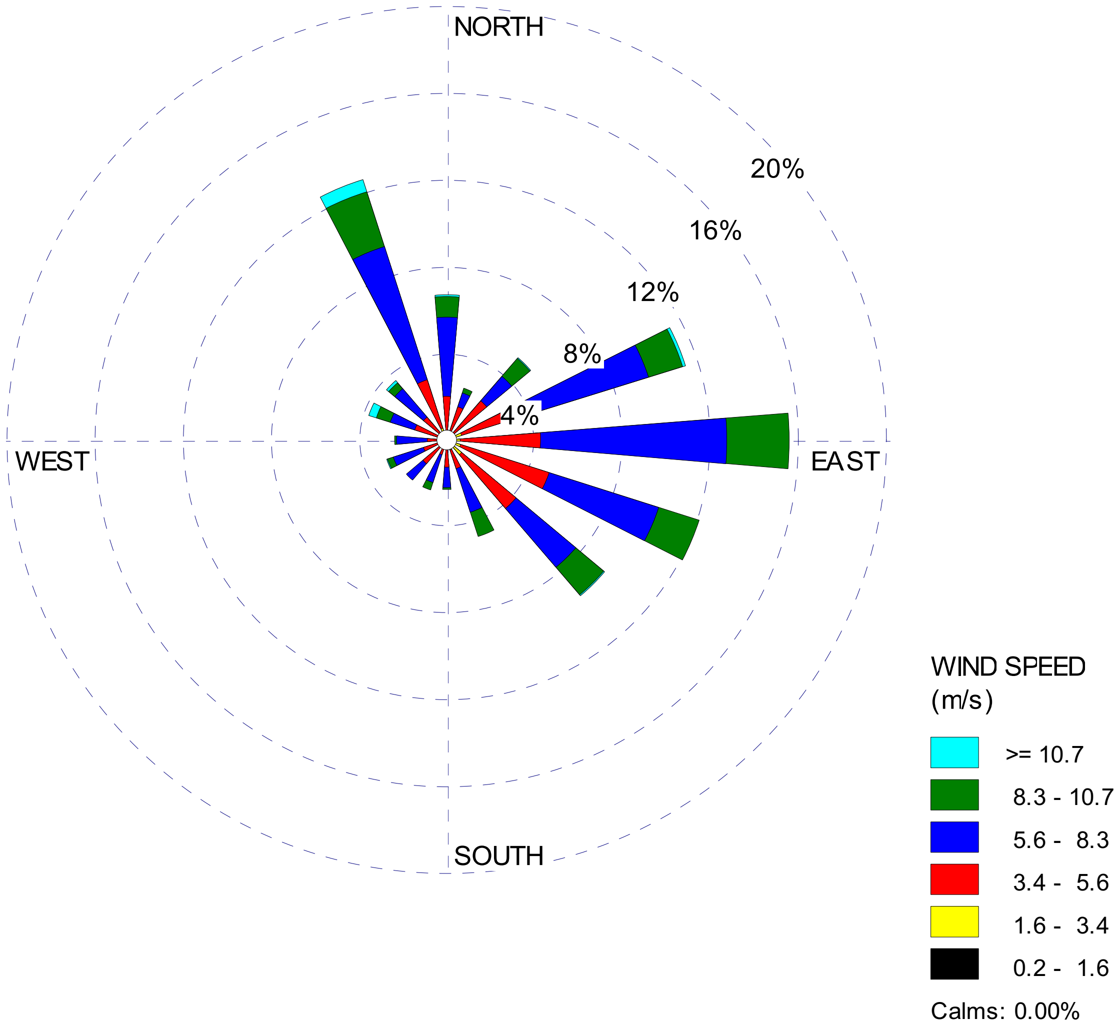


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — February (2002, 2005, and 2006) (Sheet 2 of 12)

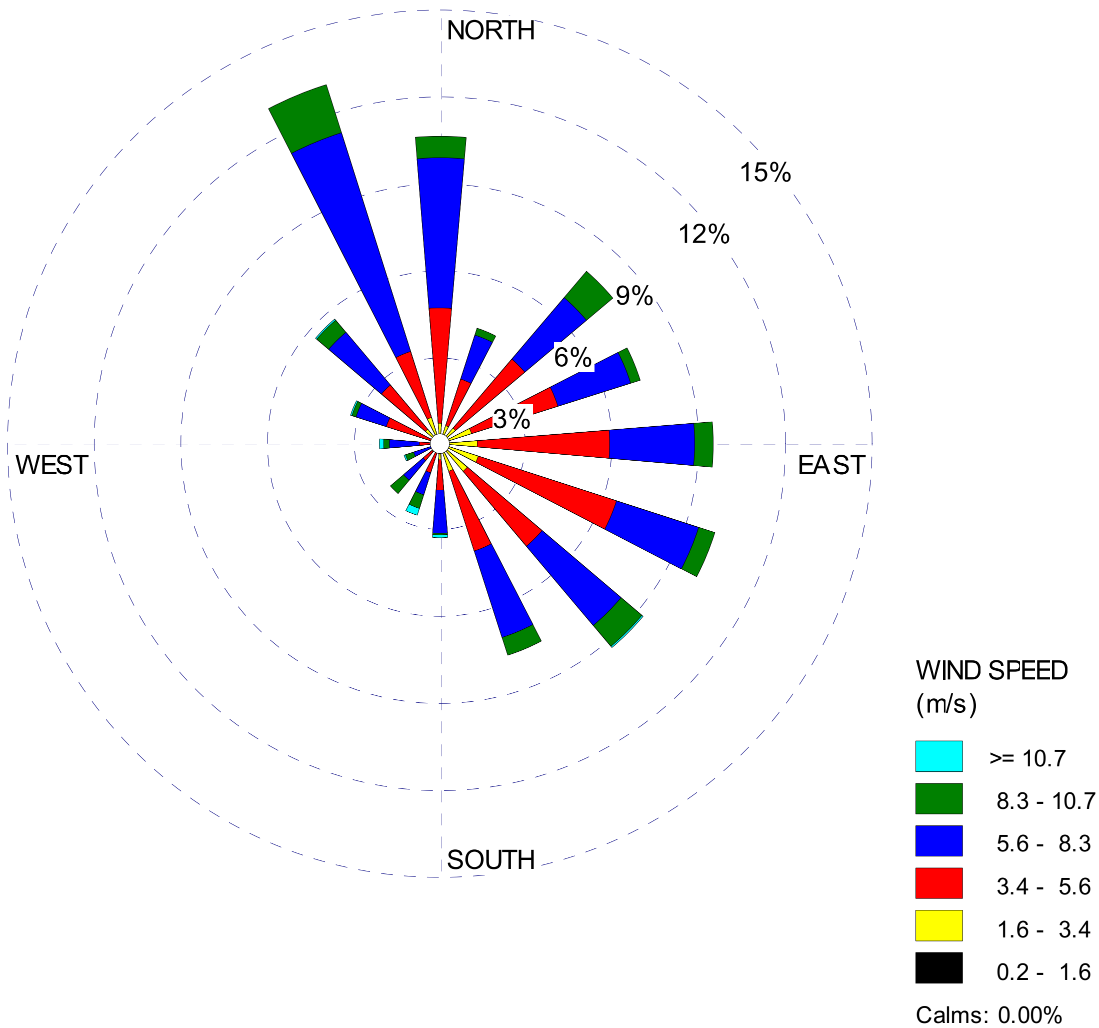


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — March (2002, 2005, and 2006) (Sheet 3 of 12)

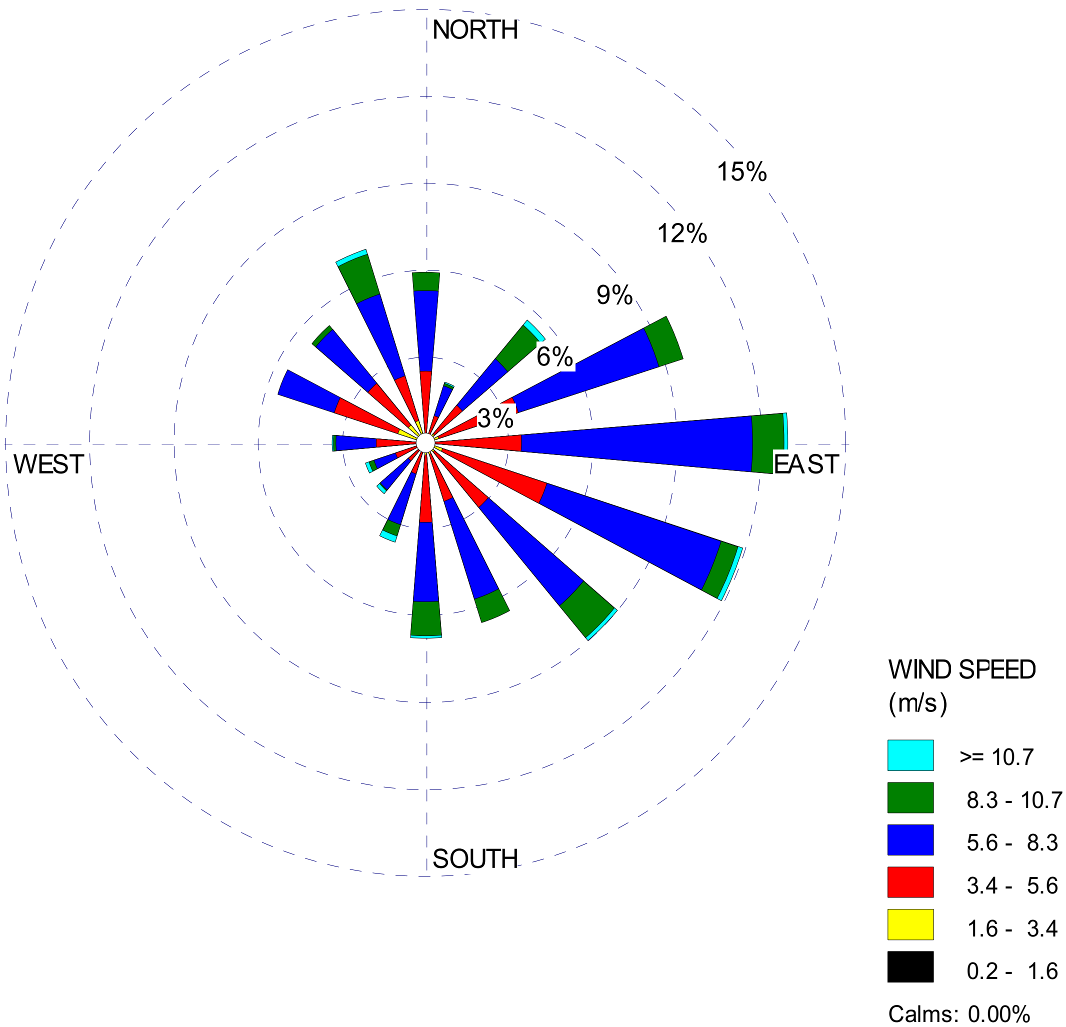


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — April (2002, 2005, and 2006) (Sheet 4 of 12)

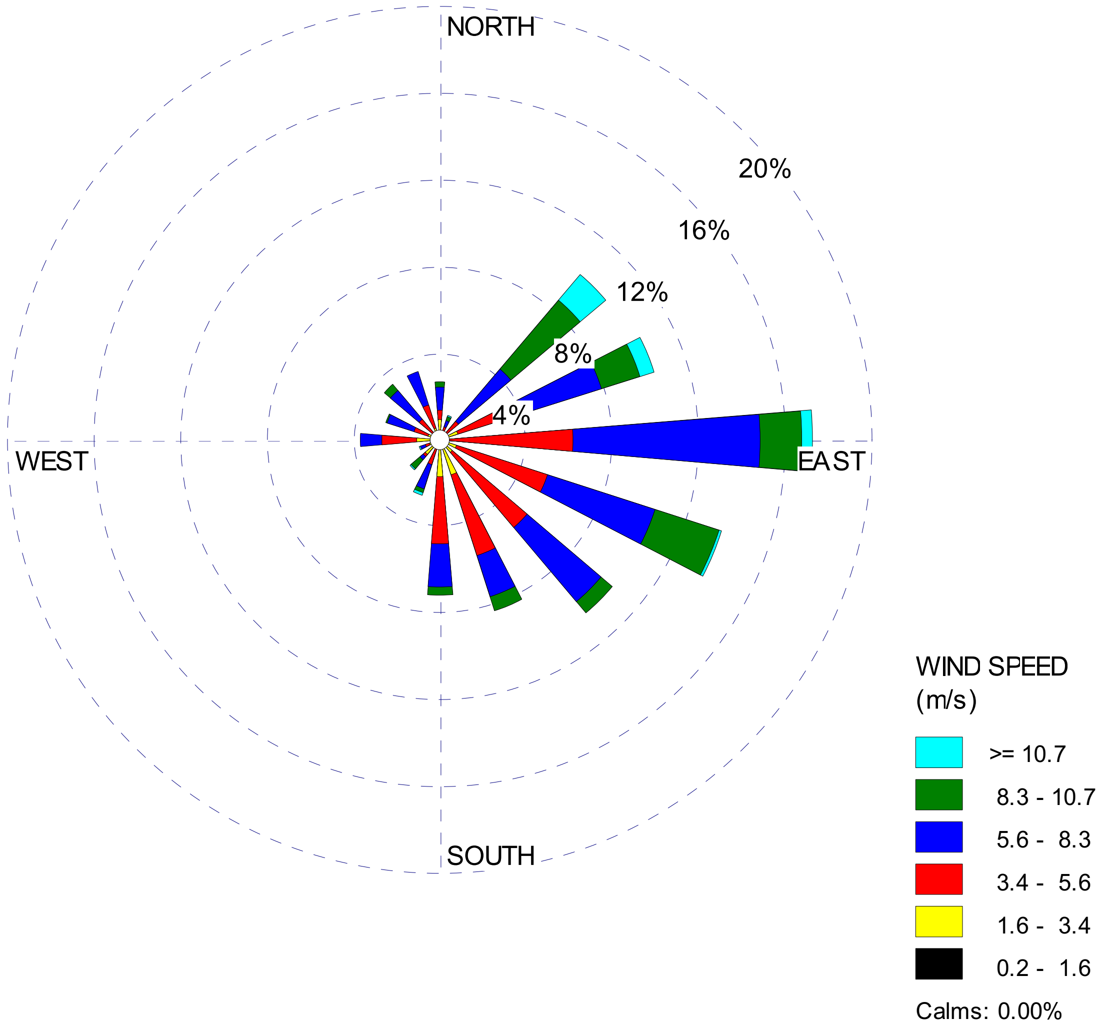


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — May (2002, 2005, and 2006) (Sheet 5 of 12)

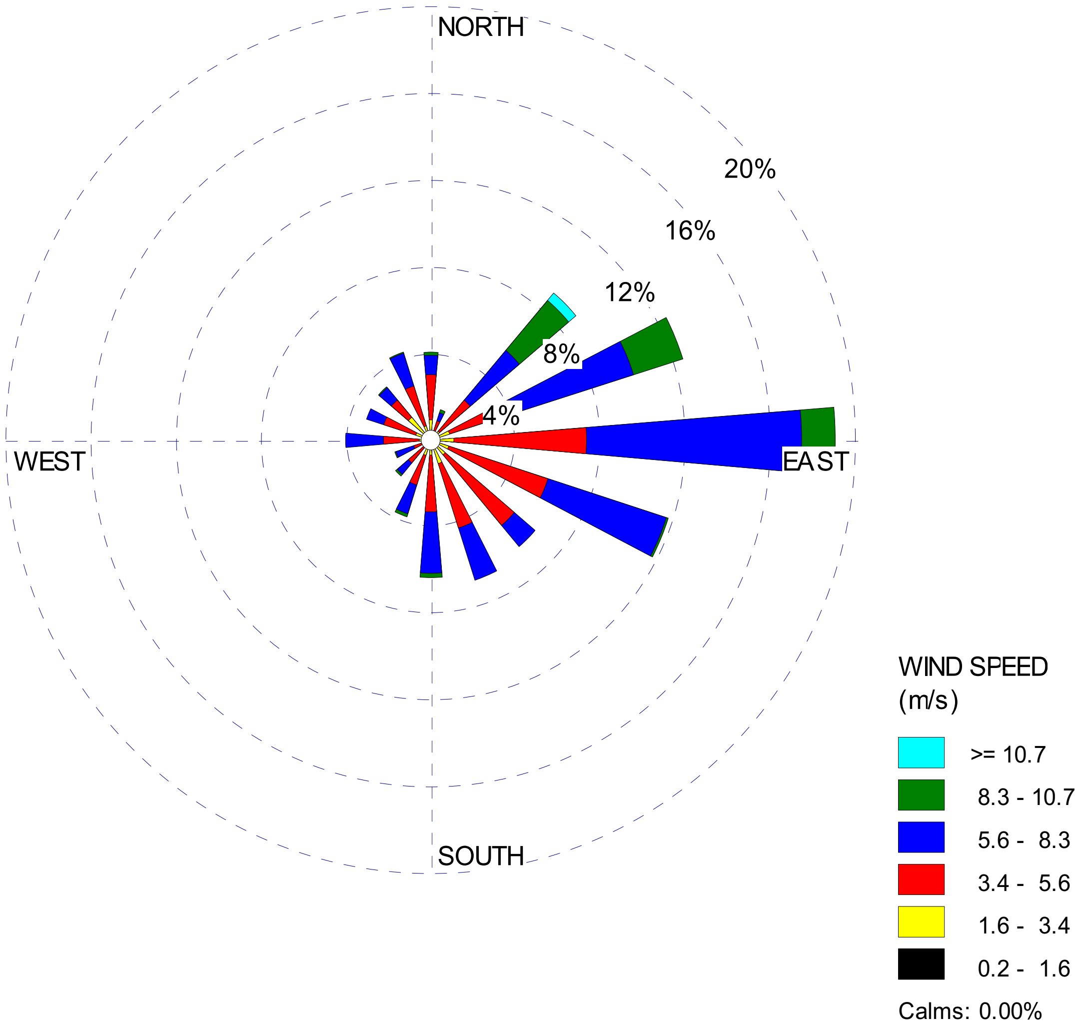


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — June (2002, 2005, and 2006) (Sheet 6 of 12)

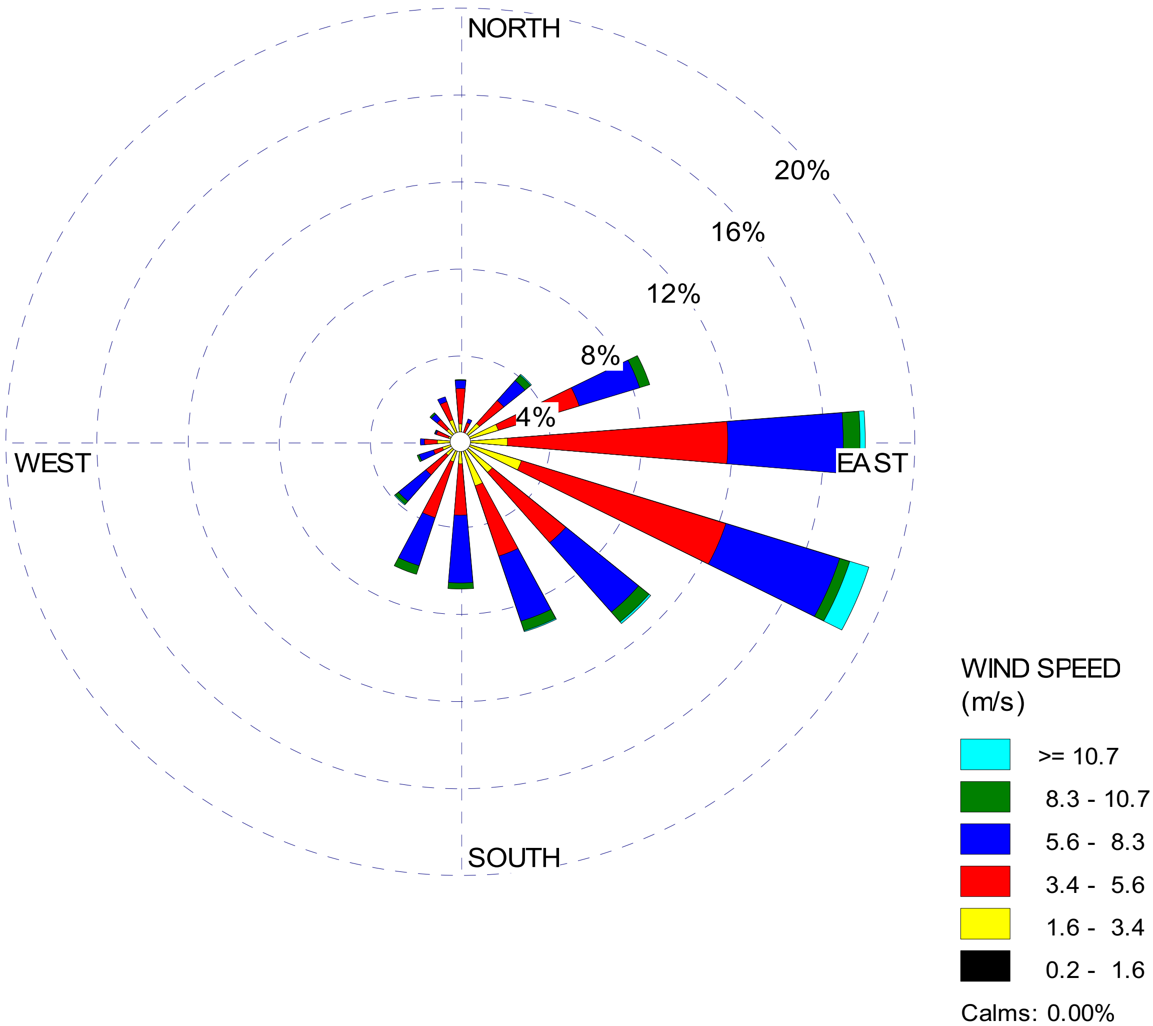


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — July (2002, 2005, and 2006) (Sheet 7 of 12)

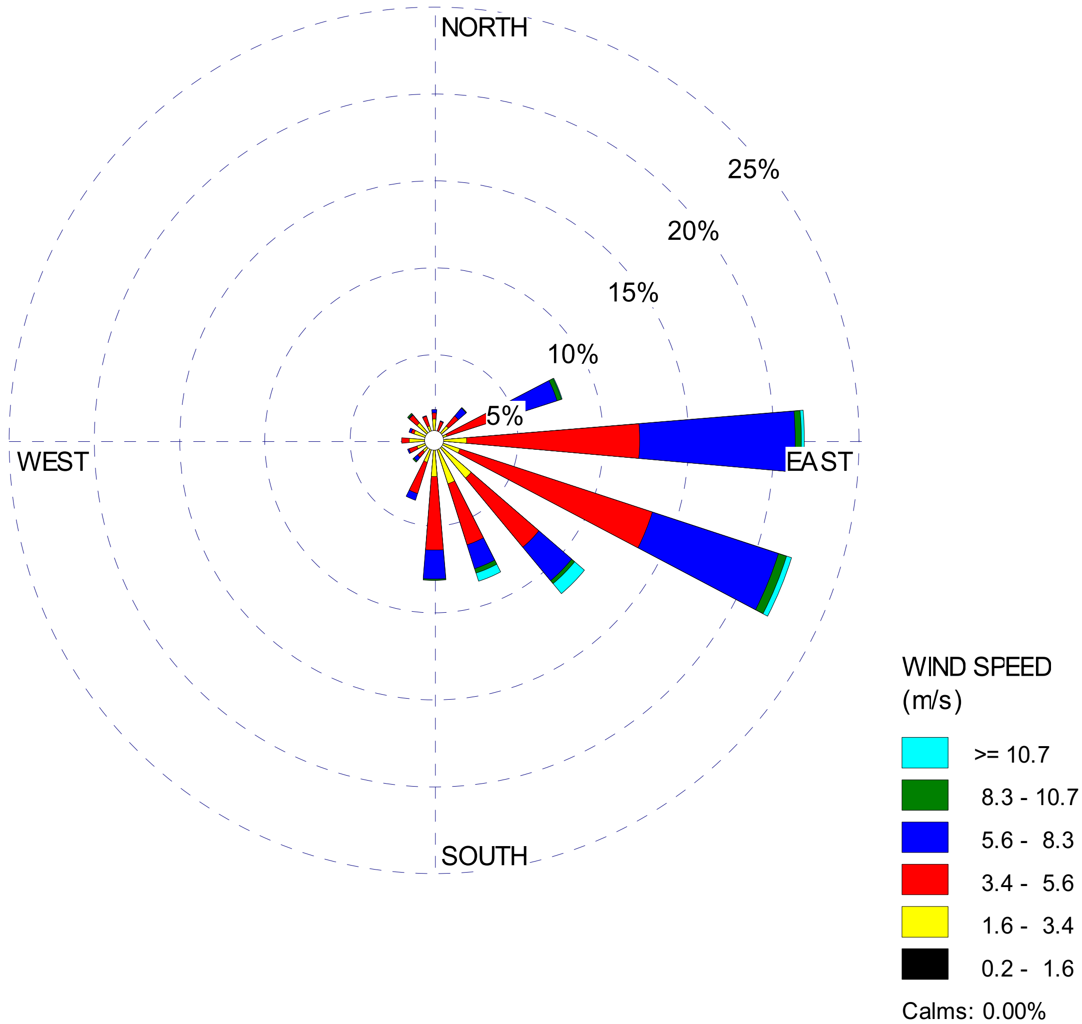


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — August (2002, 2005, 2006) (Sheet 8 of 12)

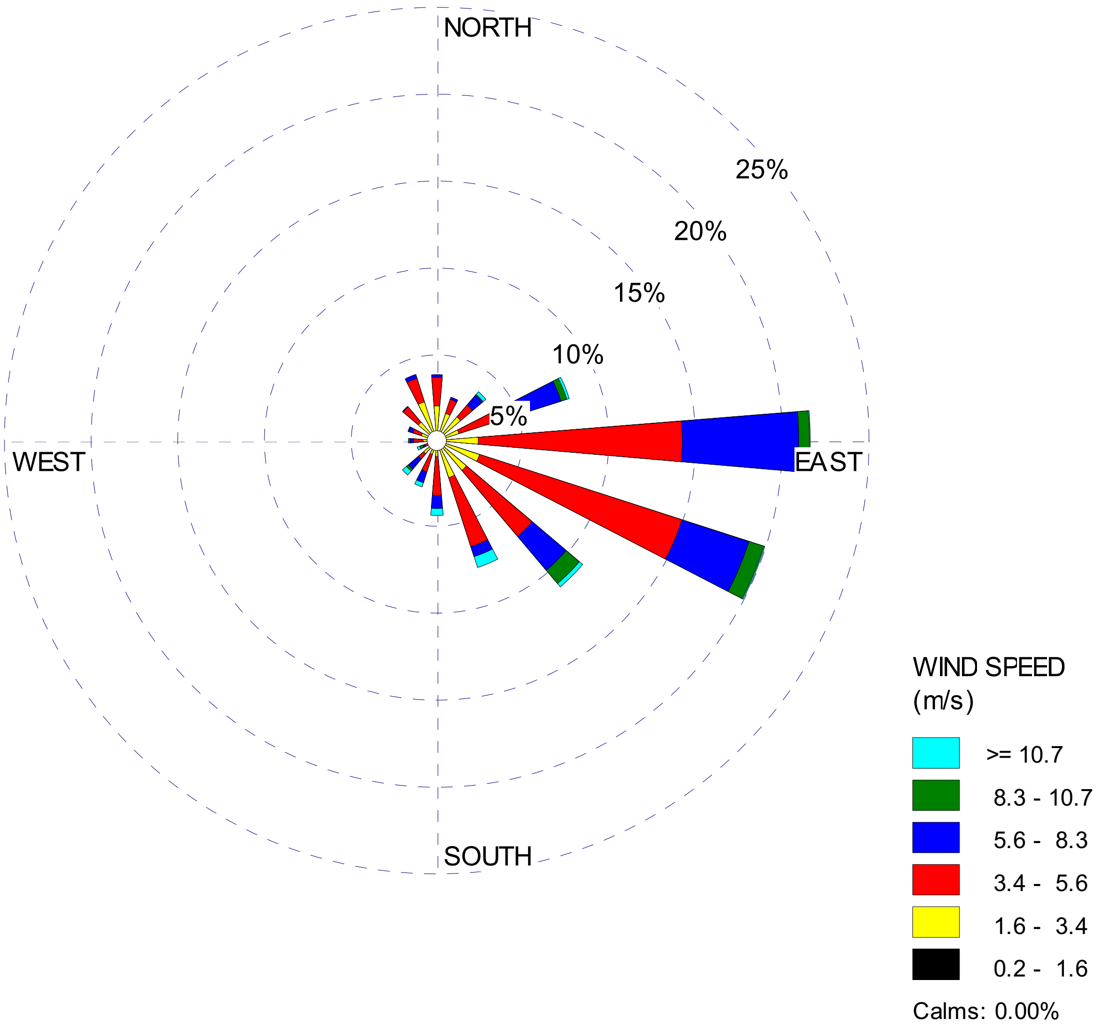


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — September (2002, 2005, and 2006) (Sheet 9 of 12)

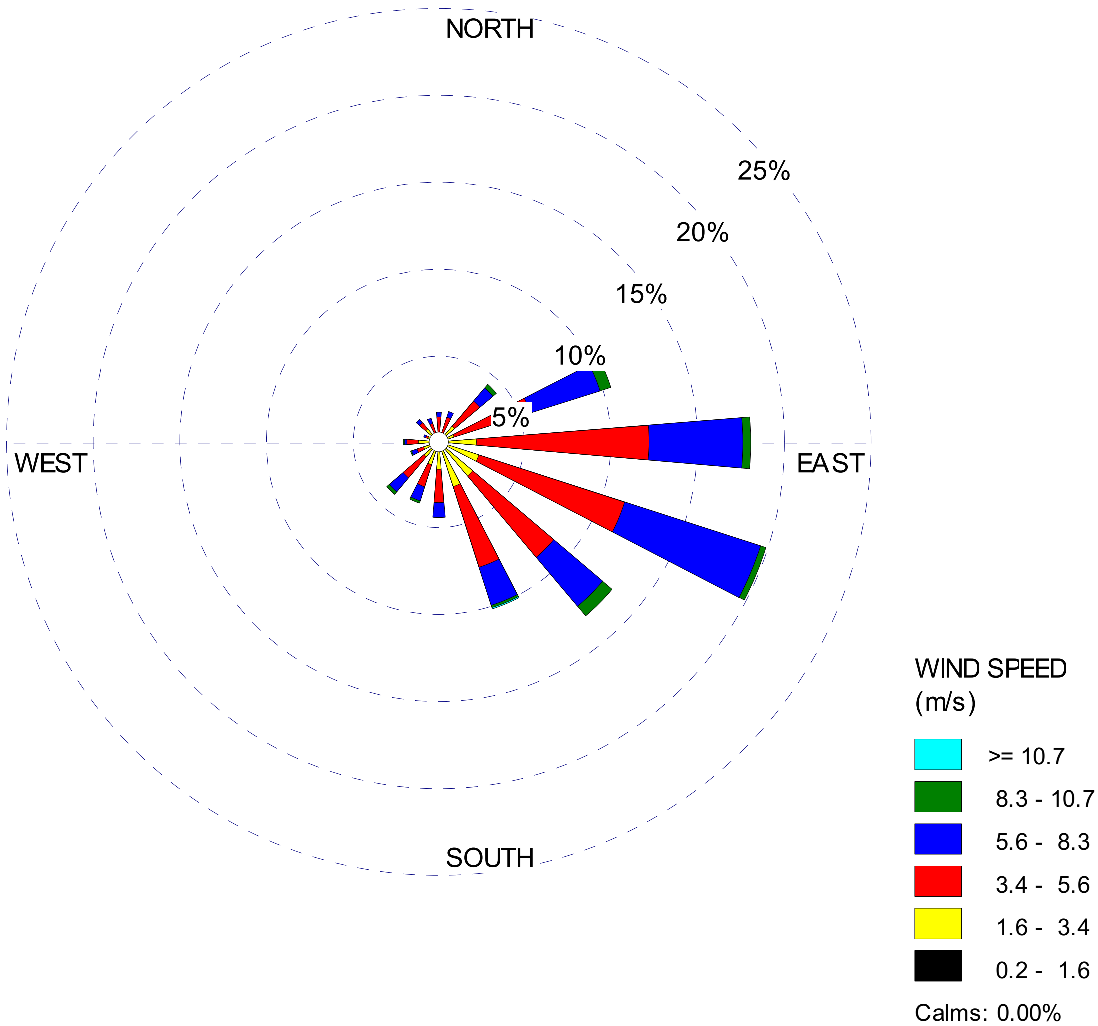


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — October (2002, 2005, and 2006) (Sheet 10 of 12)

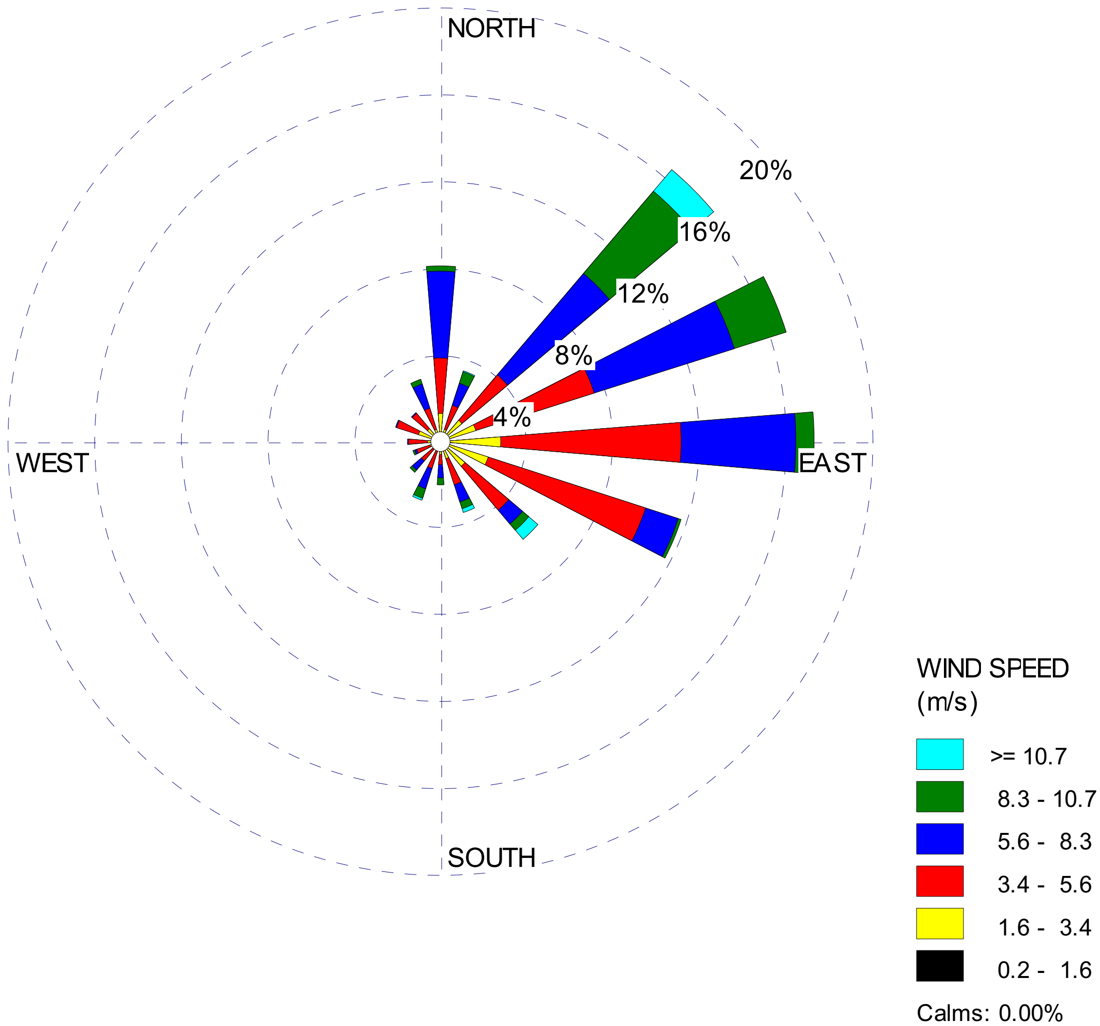


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — November (2002, 2005, and 2006) (Sheet 11 of 12)

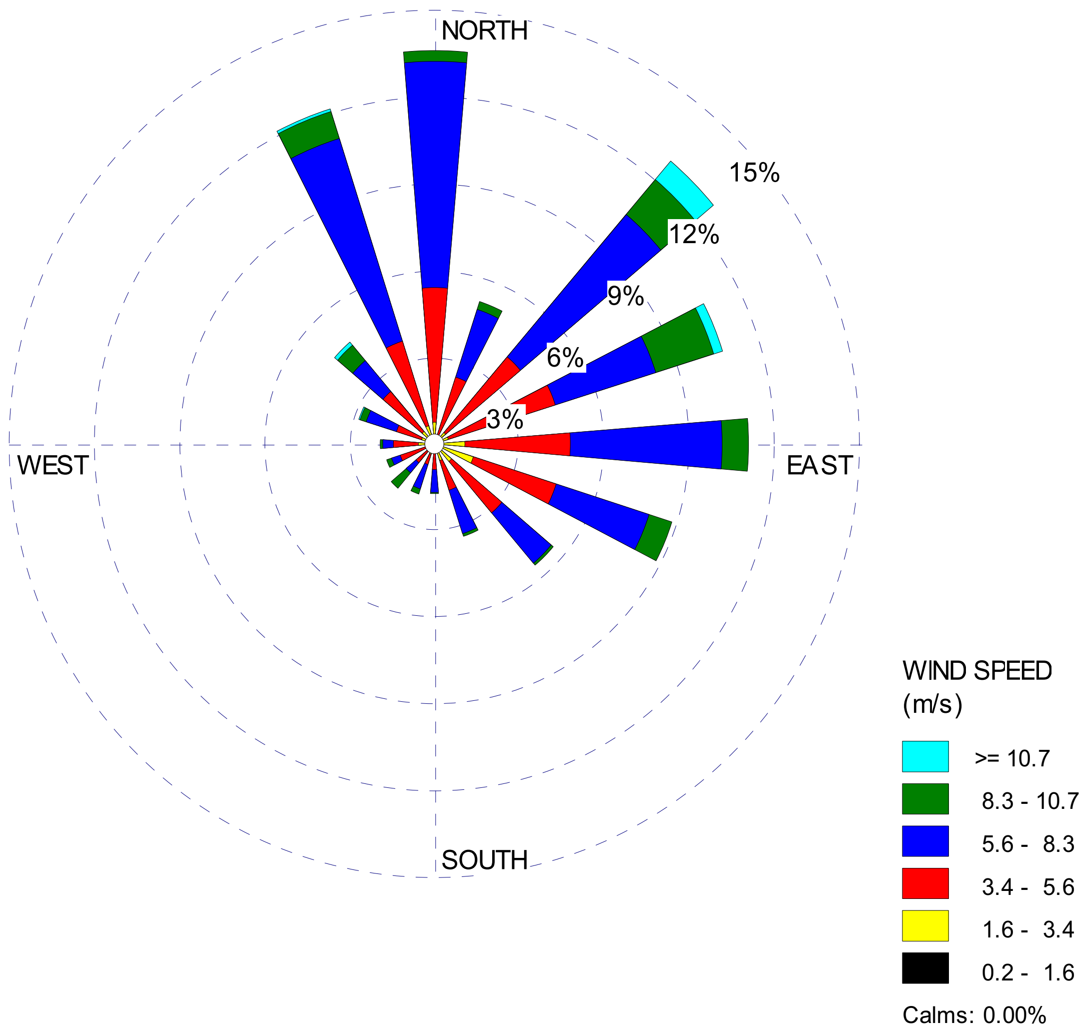


Figure 2.7-13 60-Meter Level 3-Year Composite Wind Rose — December (2002, 2005, and 2006) (Sheet 12 of 12)

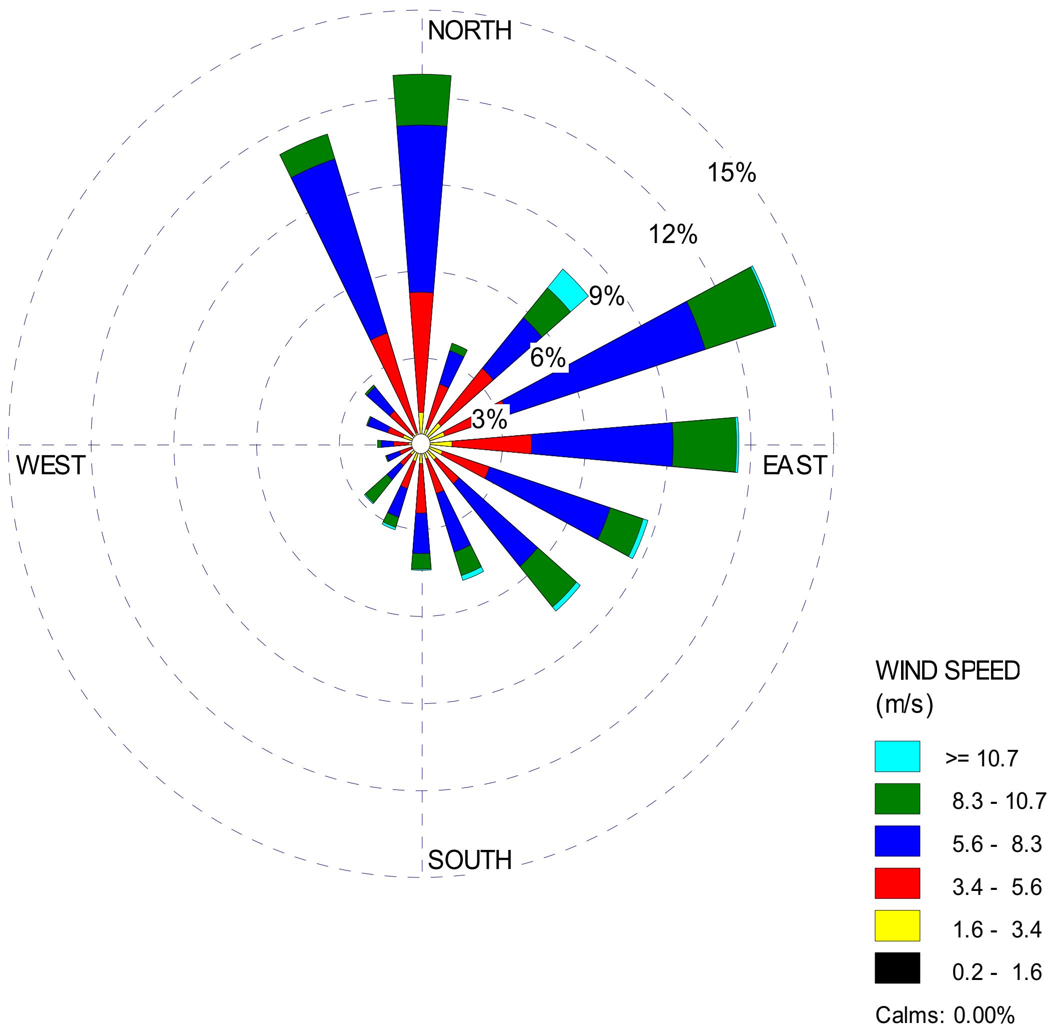
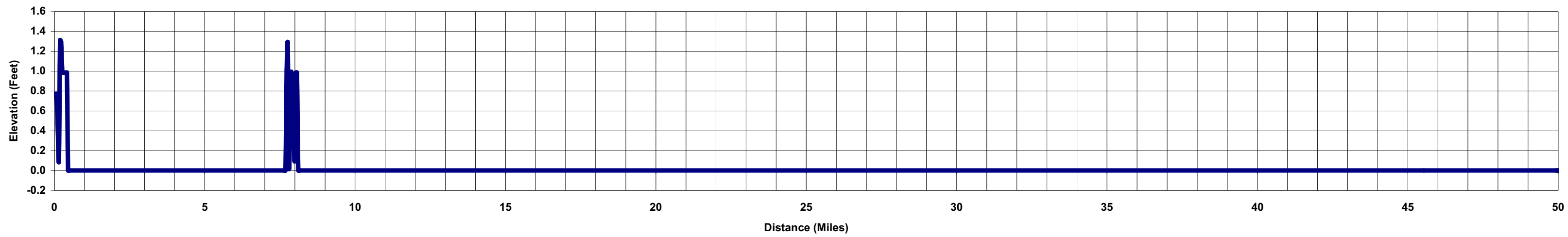


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 1 of 8)

Profile 1: East



Profile 2: East-northeast

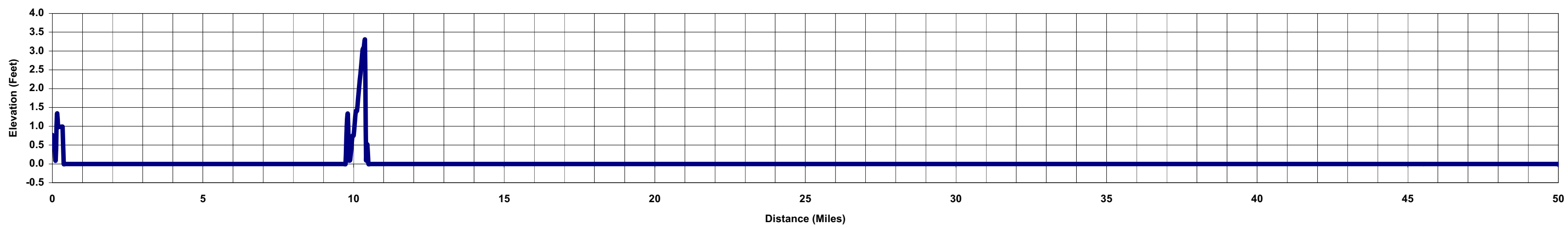
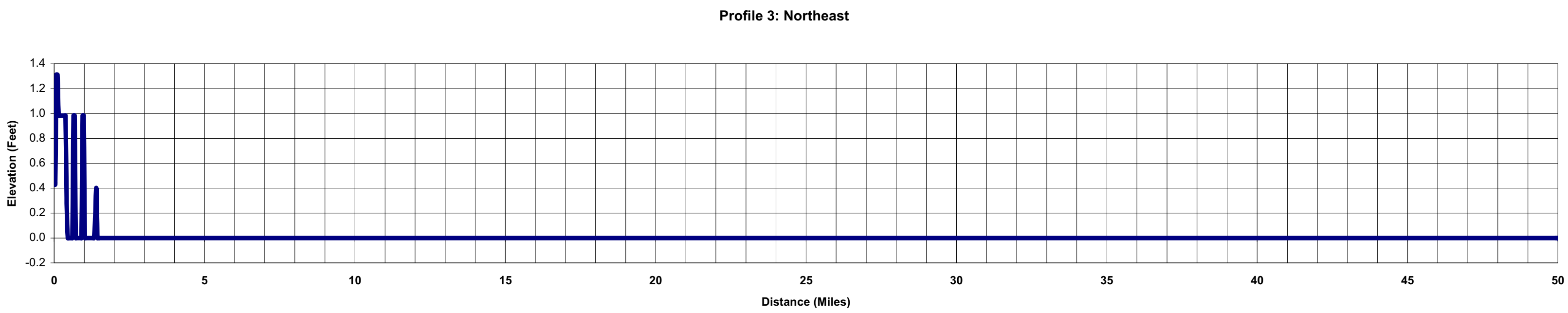


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 2 of 8)



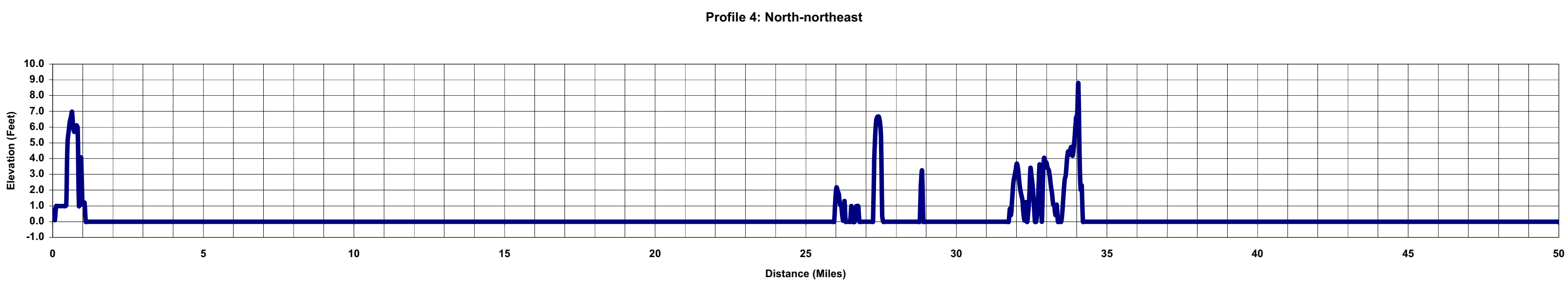
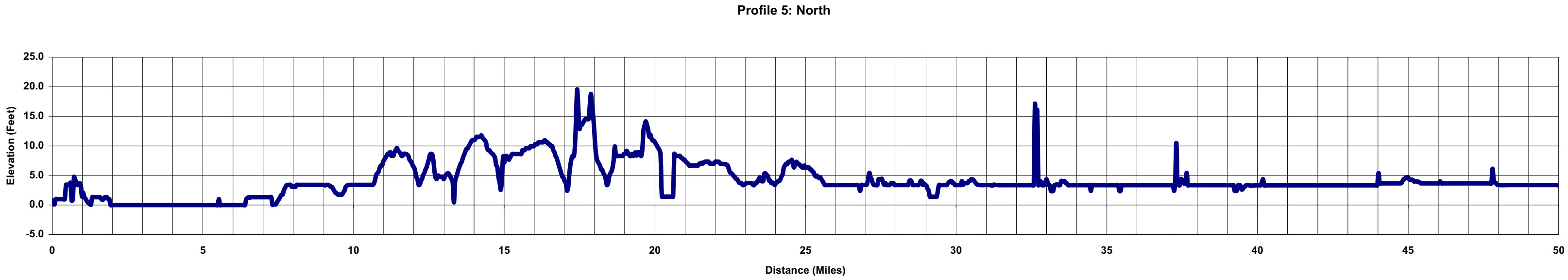


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 3 of 8)



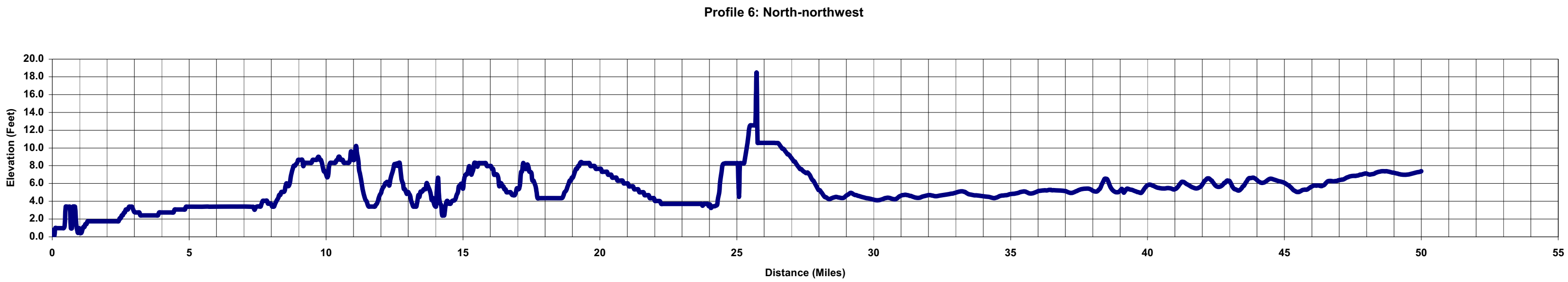
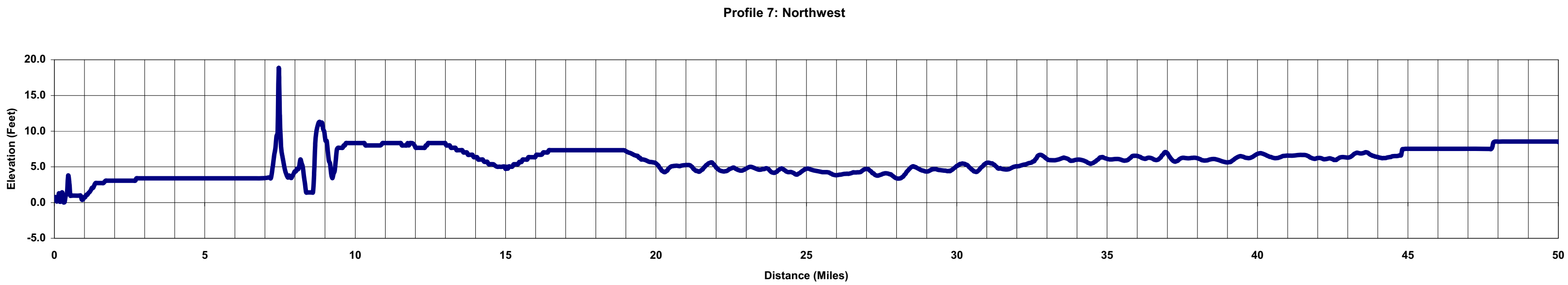


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 4 of 8)



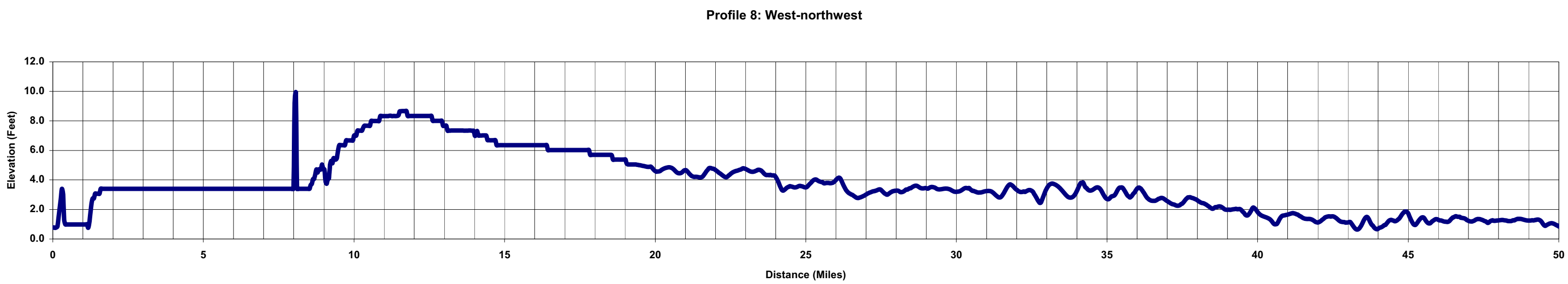
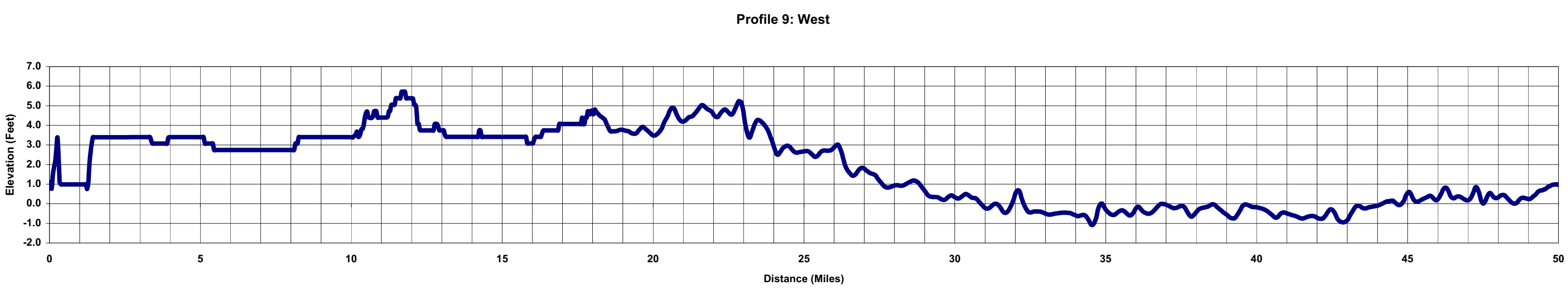


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 5 of 8)



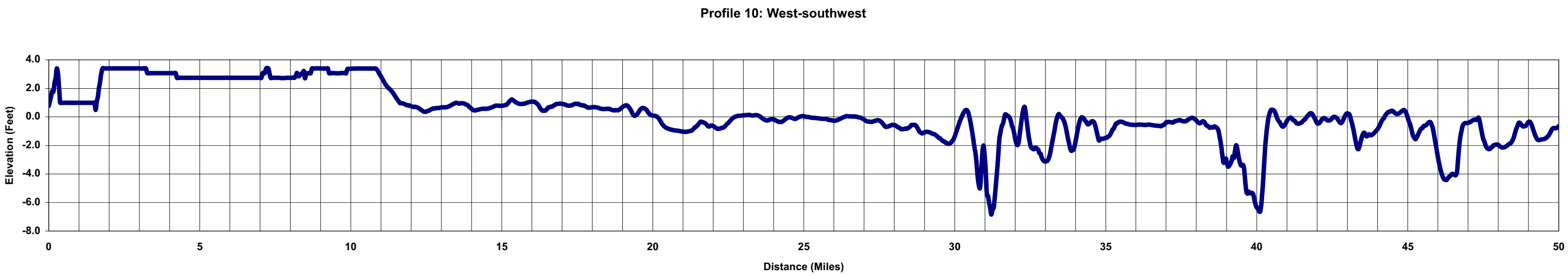
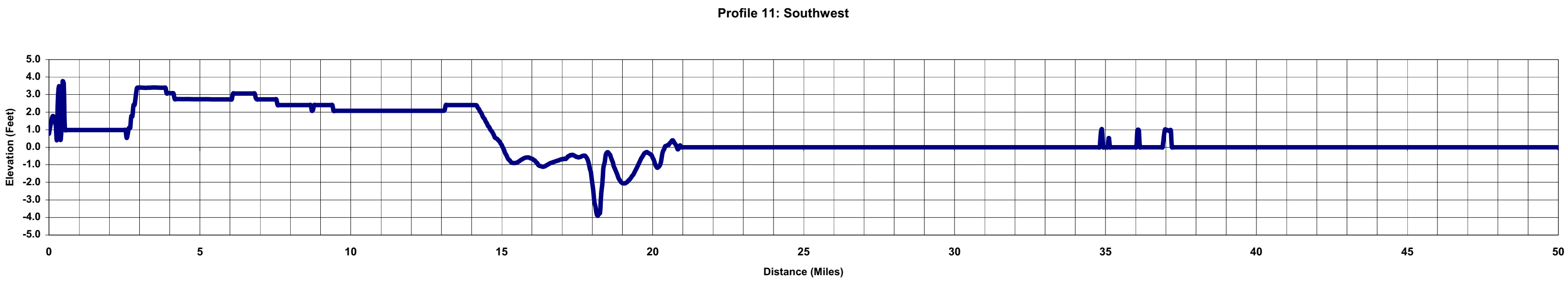


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 6 of 8)



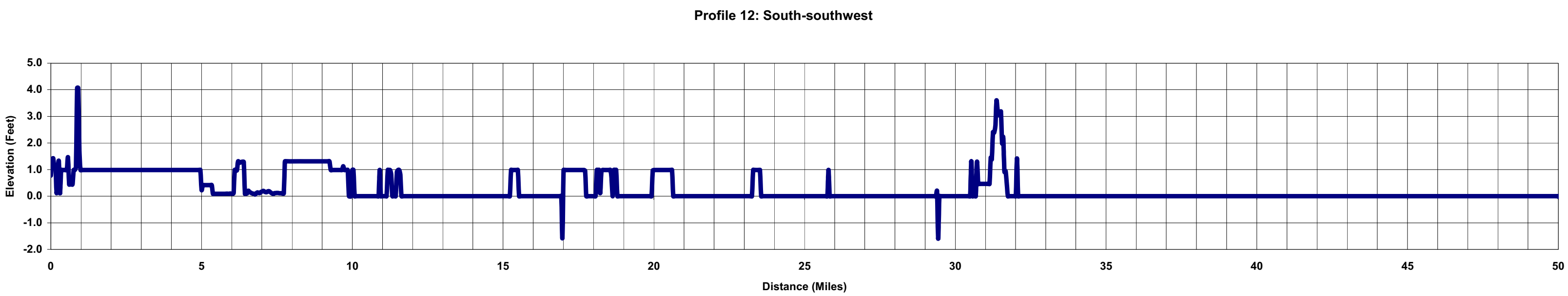
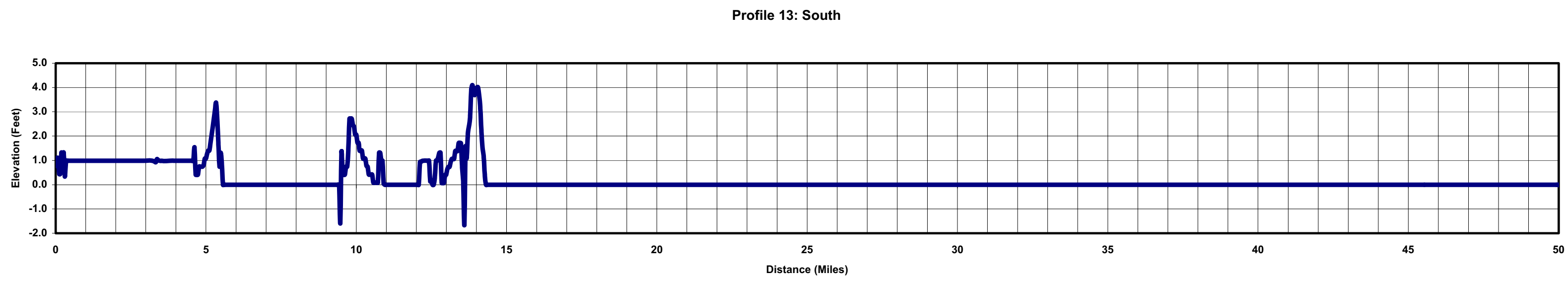


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 7 of 8)



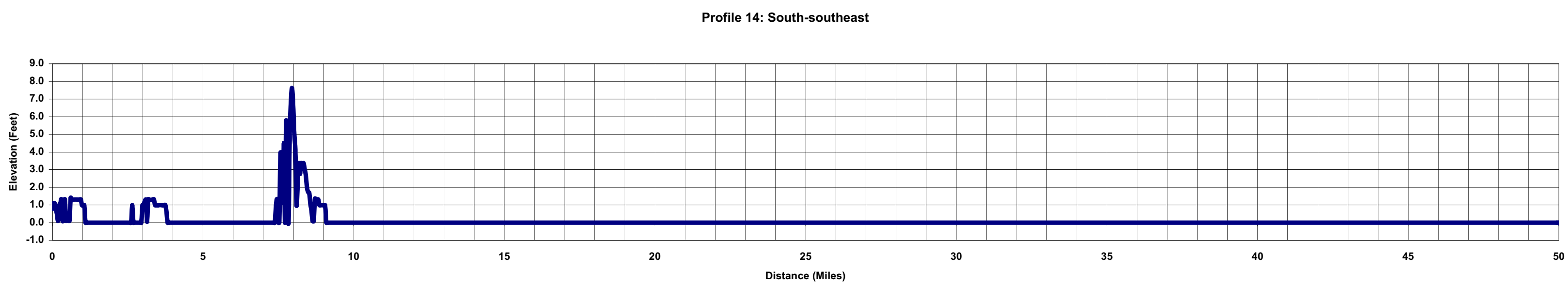
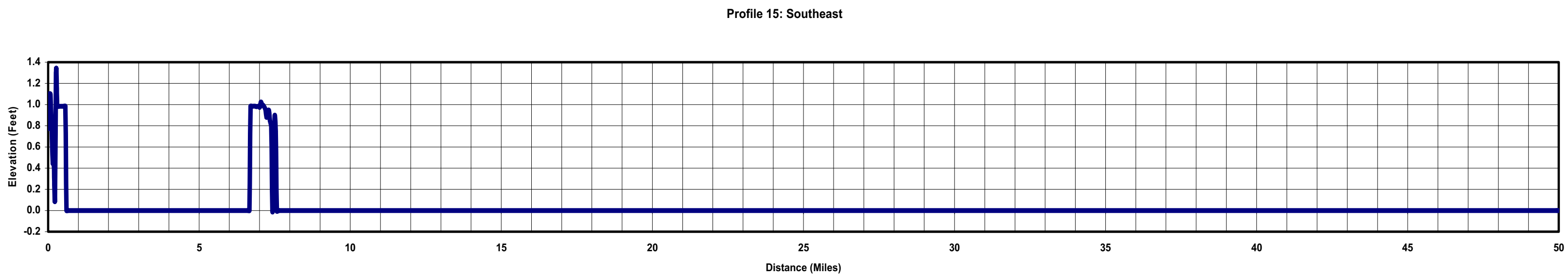
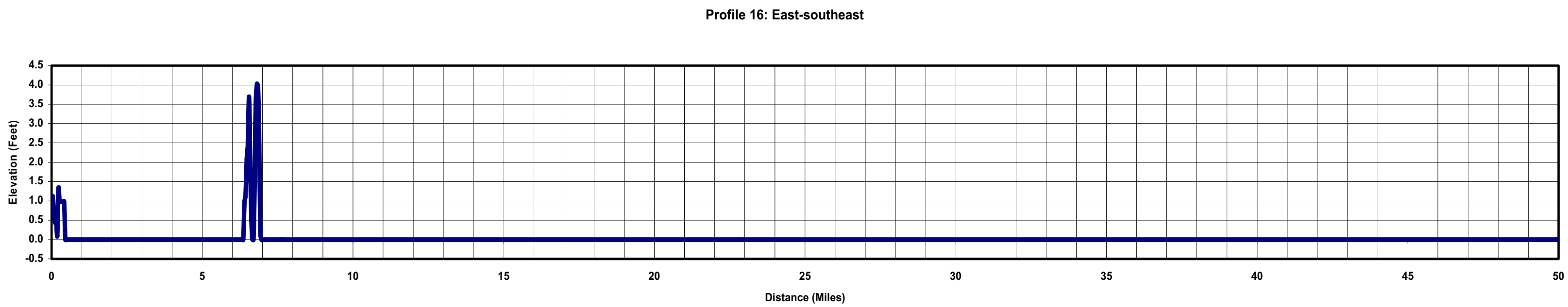


Figure 2.7-14 Terrain Elevation Profiles within 50 miles of Units 6 & 7 (Sheet 8 of 8)





Reference: ESRI Data and Maps and Streetmap USA, 2005, USGS Seamless Data Distribution

Figure 2.7-15 Topographic Features Within a 50-mile Radius of Units 6 & 7

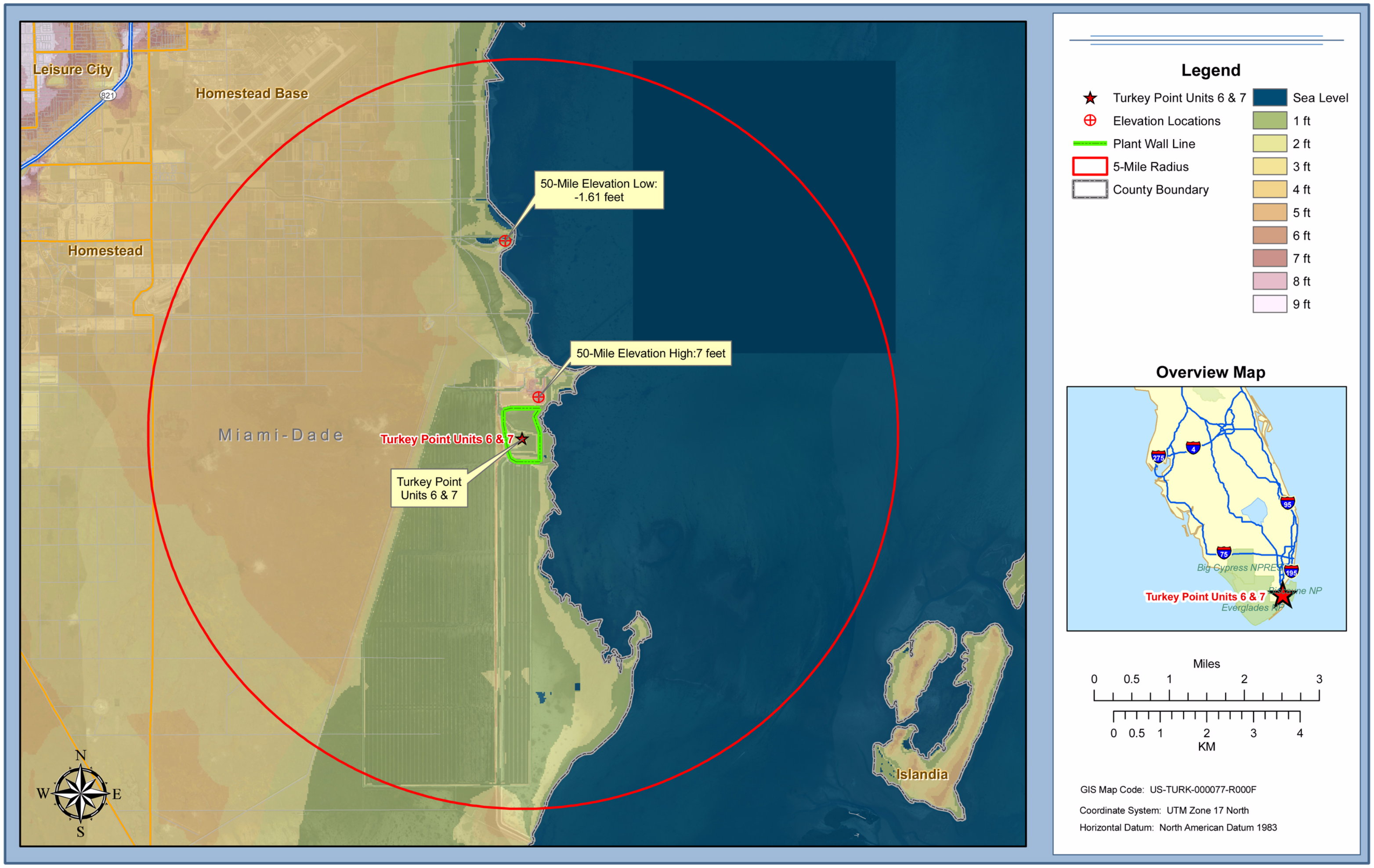


Figure 2.7-16 Noise Monitoring Locations