## 2.5 Socioeconomics

The existing socioeconomic characteristics of the region associated with Fermi 3 are established in this section under five subheadings: 1) Demography, 2) Community Characteristics, 3) Historic Properties, 4) Environmental Justice, and 5) Noise. These sections provide a discussion of the baseline socioeconomic characteristics within a 50-mi radius of the Fermi 3 site. In addition, socioeconomic characteristics are also described for the 10-mi radius and the 3-mi low population zone (LPZ). Data are provided in sufficient detail to support conclusions made in subsequent impact sections regarding the socioeconomic impacts of Fermi 3 construction and operation. The submitted information meets 10 CFR 100.10 and 10 CFR 50.34(a)(1) and serves as a basis for assessing radiological impacts of the station operation and assessment of socioeconomic factors and impacts.

### 2.5.1 **Demography**

The demographics of the Fermi 3 project area are described in this subsection. In most instances, the population statistics are taken from the 2000 U.S. Census data contained in the LandView® 6 software[1]. This software is a flexible tool capable of identifying economic and demographic information for selected areas that can be defined as concentric circles lying at various distances from a given geographic location. The most commonly used geographic area in this section is the *region*, defined as the area encompassed by a 50 mile radius from the center of the Fermi 3 power block. The region includes all or a portion of the 16 counties in Michigan and Ohio and 3 counties in Ontario, Canada listed in Table 2.5-1[2]. These areas are also shown in Figure 2.5-1, where a 50 mile circle from Fermi 3 is also drawn.

Figure 2.5-2 indicates the segment population of the area within the 10-mi radius for Fermi 3. On this map and in all sectional maps developed for this section, the location of the Fermi 3 power block is located at the center of the drawing, and concentric circles are drawn around the center at distances of 1, 2, 3, 4, 5, and 10 miles. The circles are divided into 22.5 degree segments with each segment centered on one of the 16 cardinal compass points (e.g. north, north northeast, etc.). Within each area defined by the concentric circles and radial lines, the resident population for 2000 is listed, according to LandView® 6.

The 10-mile resident population statistics are also listed in Table 2.5-2. The population within 10 miles of Fermi 3 was 89,198 in 2000. The largest population segment lies west southwest of the site in the City of Monroe. The largest population areas, according to LandView® 6, and their

1. LandView® 6 software is the result of a collaborative effort among the U.S. Environmental Protection Agency (EPA), the U.S. Census Bureau, the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Geological Survey (USGS) to provide the public readily accessible published federal spatial and demographic data. It is composed of two software programs: the LandView® 6 database manager and the MARPLOT® map viewer. These two programs work in tandem to create a computer mapping system that displays individual map layers and the associated demographic and spatial data.

2. Generally, Canadian provinces are equivalent to U.S. states, Canadian divisions (many divisions make up a province) are equivalent to U.S. counties, and Canadian subdivisions (many subdivisions make up a division) are equivalent to U.S. tracts (many tracts make up a county).

relative locations and distances to Fermi 3 are shown in Table 2.5-3. Within 10 miles of Fermi 3, the City of Monroe has the largest population (32,339).

Figure 2.5-3 indicates the segment population for the area between 10 and 50 miles of Fermi 3. Within each area defined by the concentric circles and radial lines, the resident population for 2000 (United States) and for 2001[3] (Canada) is listed. The resident population statistics are also listed in Table 2.5-4 where it is seen that the total regional population was 5.38 million in 2000. The data indicate that the largest regional population segments lie in the Detroit metropolitan area to the north and northeast, and in the Toledo metropolitan area to the southwest of Fermi 3.

The segment population was derived from LandView® 6 using Census Block Points, which represent a small population for a limited but unspecified area around the block point, and are the most accurate method of determining segment population. Figure 2.5-4 shows all the Census Block Points for Monroe County and the demographic information that each block point represents. To develop the population for each segment, the following methodology was used:

- For the 0 to 1 mile distance from the plant, the population was not divided into directional segments. Rather, the population for all Census Block Points lying within the 1 mile radius was summed consistent with Figure 2.5-1 in NUREG 1555.
- For other distances beyond the 1 mile radius, Census Block Point populations were allocated entirely to the segments in which they were reported in LandView® 6 (see Figure 2.5-5).

For the segments in Canada, ArcGIS[4] software was used to find the percentage of each segment lying within a Canadian subdivision; this percentage was then multiplied by the population in each subdivision.

In summary, the population distribution tables and figures indicate that the Fermi site is located in a relatively sparsely populated area, and that there are major population centers to the north (Detroit) and southwest (Toledo) within the 50-mile plant radius. Within a 10 mile radius, the largest population center is associated with the City of Monroe, west-southwest of the site.

#### 2.5.1.1 **Transient Populations**

Transient populations include those populations that do not reside permanently in an area, but are there instead on a temporary basis. There are a large number of categories that can potentially be considered as part of the transient population. Such categories include employees at businesses located outside the workers' area of residence, hotel and motel guests, and patrons of sporting

3. The United States conducts a census every 10 years on the decade. Canada conducts a census every 5 years and on the year following a decade or half decade, therefore all Canada population figures are for the year 2001. Whenever, population figures are given it is assumed that they are in the year 2000 for the United States and in 2001 for Canada, unless otherwise stated. Since the two censuses are only one year apart, whenever U.S. and Canadian populations are combined, population figures will be considered to represent the year 2000.

4. ArcGIS Desktop is a mapping and data analysis software that allows the user to discover patterns, relationships, and trends in data, and to map and integrate data, perform advanced analysis, model and automate operational processes, and display results on professional-quality maps. ArcGIS Desktop is published by ESRI.

events and recreational facilities. There are also special facilities for which populations can be counted as transient, including schools, hospitals and nursing homes, and correctional facilities.

When viewing transient population figures, it should be noted that it is not possible to determine how many persons in some categories (e.g. the workforce at an employer, guests in a hotel, etc.) reside within or outside the study area, meaning that the category can lead to double counting, especially in larger geographic areas. Therefore, the sum of the resident and transient populations tends to overstate the total area population. Nevertheless, transient population estimates can be useful and are provided below for the 0 to 10 mile and 10 to 50 mile radii from Fermi 3.

#### 2.5.1.1.1 **Transient Population, 0 to 10 Miles**

An estimate of the total transient population for the 10 mile radius of the plant (referred to as the Emergency Planning Zone (EPZ) in COLA Part 5) is provided in COLA Part 5 with the "Fermi Nuclear Power Plant Development of Evacuation Time Estimates" (ETE) (Reference 2.5-1). The ETE reports two transient group populations:

- the transient population (persons who live outside of the 10 mile boundary but enter this radius for a specific reason, and then leave the radius; e.g. include campers or recreational facility users), and
- commuter-employees (persons who live outside the 10 mile radius yet commute to work within the radius)

The ETE transient information is organized by the distance and compass direction from the Fermi site. Based on the resident population developed above and the total transient population from the ETE, the total 10-mile radius population (permanent plus transient total) is estimated at 106,736 in Table 2.5-5 and the transient population of 17,538 comprises approximately 16.4 percent of this figure.

Based on the resident population developed above and the total transient population from the Evacuation Time Estimate, the total population in the 10 mile radius (resident, transient, and special facilities population) is estimated at 136,633. The total transient population is estimated to comprise approximately 34.7 percent of the total 2000 population in the 0 to 10-mile radius concentric circles.

Figure 2.5-6 is a map of the resident plus transient population distribution in the 10-mile Fermi 3 radius, divided into directional segments. The figure confirms that, in the 10-mile radius, the segment having the largest population is the City of Monroe, west-southwest of the site. Table 2.5-5 also lists the total resident and transient population estimates as well as the population densities for concentric circles within the 10-mile radius of Fermi 3.

#### 2.5.1.1.2 **Transient Population, 10 to 50 Miles**

The estimated total transient population in 2000 for the Fermi 0 to 50 mile radii is shown in Table 2.5-6 as 200,656. The table also shows the total resident and transient population and the population density for the 0 to 50 mile concentric circles. Approximately 3.6 percent of the total population in the 0 to 50 mile concentric circle is estimated to be transient.

Figure 2.5-7 is a map of the resident and transient population distribution in the 50 mile Fermi 3 region by segment. The estimated total transient population for each Michigan or Ohio segment within each concentric circle is calculated by combining estimates of the following, as explained further below:

- 2000 U.S. Census commuter information for each county (Reference 2.5-2)
- 2000 U.S. Census information from LandView® 6 on the number of Recreational, Seasonal, and Occasional housing units in the 50 mile region (Reference 2.5-3)
- Special facilities transient population data

The 2000 U.S. Census reports commuter inflow and outflow information for each county. Table 2.5-7 lists the commuter inflow and outflow data for counties within 50 miles of the Fermi site. Once this commuter information was compiled, ArcGIS software (Reference 2.5-4) was used to find the percentage of each county lying within a segment. Multiplying this percentage by the commuter net flow for each county produces an estimate of the net commuter transient population for each concentric circle segment for the 10 to 50 mile radii.

The LandView® 6 software is used to estimate the transient population associated with the use of recreational, seasonal, or occasional housing units as follows. LandView® 6 is used to determine the number of houses in each segment based on Census Block Point data. For each segment, the number of housing units is then multiplied by the percentage of total housing units in the generally corresponding Census Block Group classified as “for recreational, seasonal, or occasional use.” The result is an estimate of the number of houses in each segment that are vacant. Next, and to translate this into a population estimate, the number of units for recreational, seasonal, or occasional use for each segment is multiplied by the county’s average household size to arrive at the maximum population in recreational, seasonal, or occasional housing units in each segment. Finally, because these units are only occupied part of the year, it is arbitrarily assumed that three quarters of the housing units would only be occupied for three months (one quarter) of the year. Thus, by multiplying the maximum population in recreational, seasonal, or occasional housing units by 0.1875 (0.75 * 0.25) an estimate of the equivalent transient housing population for recreational, seasonal, or occasional use for each segment is derived.

Table 2.5-8 lists special facilities transient population information for several categories (correctional facilities, college dormitories, nursing homes, hospitals, religious group quarters, and other non household living situations) for each county within 50 miles of Fermi 3. ArcGIS software was used to find the percentage of each county lying within a segment. Multiplying this percentage by the transient population for each county produces an estimate of transient population for each concentric circle segment for these several categories.

The transient population for segments in Canada is assumed to be equal to the same percentage as the transient population percentage in the United States. This methodology is deemed appropriate because the transient population makes up a small percentage of the total population, 3.6 percent for the U.S. region within 50 miles of Fermi 3, and the percentage of resident Canadian population to the whole regional resident population is 8.7 percent.

### 2.5.1.2 Projected Total Population

Assessing the potential socioeconomic impact of Fermi 3 requires a population projection. Population projections for the segments within 10 miles of Fermi 3 for 2020 (the assumed first year of operation) and for each subsequent decade for four decades through the year 2060 are based upon the average annual growth rate in United States county census population from 1990 through 2005 (Table 2.5-9) for the regional counties, applied to the 2000 resident and transient population estimate for each segment. ArcGIS software is used to find the percentage of each segment lying within an area. A weighted average growth rate for each segment is calculated by summing up the product of the county growth rate and the segment tract area percentage associated with each county. Figure 2.5-8 shows a graphical representation of this methodology. The transient population was estimated to grow at the same rate as the resident population because schools, employment, and a number of other transient categories are generally linked to resident population. The resulting population projection is shown in Table 2.5-10.

The population projections for the 10 to 50 mile segments from Fermi 3 for 2020 (the projected first year of operation) and for each subsequent decade for four decades through the year 2060 (the projected end of the initial license period plus 10 years) are based upon the average annual growth rate in United States county census population from 1990 through 2005 (Table 2.5-9) and the average annual growth rate in Canadian census subdivision population from 1996 through 2006 (Table 2.5-11), applied to the 2000 (US) and 2001 (Canada), resident and transient population estimate for each segment. The resulting population projections for the 10 to 50 mile segments are shown in Table 2.5-12.

### 2.5.1.3 LPZ, 10 Mile Radius, and Regional Characteristics

The age and gender distributions in 2000 for the regional counties around Fermi 3 are listed in Table 2.5-13. The table indicates more females than males in the region and that the 35 to 44 age group is the largest age grouping for the more than 5 million people in the regional counties. Table 2.5-14 provides similar information for the Canadian population in the region. Note that to derive the detailed age estimates for the U.S. counties, the methodology requires a change from the previous population estimates made from LandView® 6. Previous population estimates in this section were based on census information organized and reported according to Census Block Points that, in the LandView® 6 software, allows a relatively precise estimate of population within 50 miles (or other distance) from Fermi 3. However, age distribution is not available at the Census Block Point level in LandView® 6, and a larger census reporting area called the Census Block Group (CBG) must be used, as this reporting area does include age distribution data. According to the LandView® 6 supporting documentation, the average CBG contains about 39 Census Block Points. The consequence of using this CBG estimating approach is that the block groups do not exactly coincide with the 50 mile (or other distances) radius from Fermi 3. Instead, and as shown in Figure 2.5-9, some of the CBGs near the 50 mile radius extend beyond the 50 mile circle. This has the effect, in the instance of the 50 mile radius, of increasing the resident population from 5,378,266 using the Census Block Point method, to 5,570,309. Likewise, at the 10 mile radius, the CBG estimating approach produces a population of 100,931 rather than the 89,198 estimate under the more precise Census Block Point method. Figure 2.5-10 indicates the CBGs lying wholly or partly within the 10 mile radius. Figure 2.5-11 indicates the CBGs in the low population zone (LPZ).

Racial and ethnic population characteristics for the LPZ, defined as the area within 3 miles of Fermi 3, the 10 mile radius, and the region are listed in Table 2.5-15 for U.S. counties, and in Table 2.5-16 for Canadian populations in the region. To derive the data in the tables, the CBG estimating approach was again used, meaning that CBGs wholly or partly within the selected areas were included in the estimates.

Racial and ethnic population characteristics for the LPZ, defined as the area within 3 miles of Fermi 3, the 10 mile radius, and the region are listed in Table 2.5-15 for U.S. counties, and in Table 2.5-16 for Canadian populations in the region. To derive the data in the tables, the CBG estimating approach was again used, meaning that CBGs wholly or partly within the selected areas were included in the estimates.

Data indicate that for the U.S. counties in the region, the 3.5 million Caucasians comprise 70 percent of the overall population (5.1 million) followed by the 1.1 million African-Americans who account for 22 percent of the regional population. In the LPZ and 10 mile radius, Caucasian populations comprise 94 percent and 93 percent of the total population, respectively. Similarly, some 89 percent of the Canadian population in the region is Caucasian.

Income distribution information by household for the LPZ, 10 mile radius, and the region is listed in Table 2.5-17[5]. As indicated in the table, the largest category in each geographic area is the $50,000 to $74,999 grouping. The median household income for households in the LPZ was $58,325 in 2000, and was $51,807 for the 10 mile radius and $47,852 in the region. Table 2.5-18 lists additional income information for the regional counties, Michigan, Ohio, and the U.S. Both Michigan (12.5 percent) and Ohio (11.7 percent) have poverty rates below the national average of 12.7 percent. Monroe County, Michigan, where Fermi 3 is located, has a poverty rate of only 8.7 percent. Table 2.5-19 provides similar income data for the Canadian population, arranged by subdivision within the Province of Ontario.

#### 2.5.1.4 Jurisdictional Population Estimates

Recent population data is available for the counties and municipalities in the selected region from the U.S. Census Bureau. Data for the counties in the region plus selected municipalities is provided in Table 2.5-19-A. From 2000 through 2008, the counties in the region experienced a slight decrease in population, with the cities of Detroit and Toledo also experiencing a decrease in population.

### 2.5.2 Community Characteristics

This subsection describes the community characteristics in the vicinity of the Fermi site. For many of the community characteristics discussed, the emphasis is on Monroe County and Frenchtown Township, although some statistics are also presented for Wayne County, Lucas County and the

5. The corresponding information for the Canadian divisions is not available from the Canadian Census.

two surrounding metropolitan areas of Toledo and Detroit in those categories that could incur a noticeable impact due to Fermi 3 construction or operation. Limited data is also presented for the portion of Canada within the 50-mile Fermi region and the limited amount of data is appropriate due to the expected lack of significant impact on Canadian community facilities and services from the Fermi 3 project.

This overall focus is appropriate because the largest potential for increased demand for community facilities and services, relative to the existing level of services, will be in Monroe County and Frenchtown Township, where Fermi 3 is located. While the large Detroit and Toledo population centers are likely to be home to many of the Fermi 3 construction and operational workforce, these workers will be widely dispersed and many will be commuting to the site from existing residences, thereby avoiding significant new demands for community facilities and services in these areas. Community characteristics in Lucas County and Wayne County that are discussed include those that could be realistically impacted and include the area economic base (Subsection 2.5.2.1), demographics (Subsection 2.5.2.3), social structure (Subsection 2.5.2.4), housing (Subsection 2.5.2.5), education (Subsection 2.5.2.6), police service (Subsection 2.5.2.9.2), fire protection (Subsection 2.5.2.9.3), hospital and ambulance service (Subsection 2.5.2.9.4), highways (Subsection 2.5.2.10.1), airports, ports, and railways (Subsection 2.5.2.10.2), and distinctive characteristics (Subsection 2.5.2.11). Descriptive areas limited to Monroe County and Frenchtown Township include political structure (Subsection 2.5.2.2.1), tax base (Subsection 2.5.2.2.2), recreational facilities (Subsection 2.5.2.7), land use planning and zoning (Subsection 2.5.2.8), water and sewer services (Subsection 2.5.2.9.1), and public transportation services (Subsection 2.5.2.10.2). This focus is consistent with the emphasis of NUREG-1555's discussion of the "relevant region."[6] Subsection 2.5.2 is confined to describing the region's baseline characteristics; while in Section 4.4 and Section 5.8, the respective impacts from Fermi 3 construction and operation are evaluated.

#### 2.5.2.1 Area Economic Base

The region's economic base owes its historical development to manufacturing and, in particular, to the automotive industry. Dating back to the turn of the 20th century and to Henry Ford's early production facilities in Detroit, the regional economy benefited greatly from the assembly line production method and the subsequent emergence of dozens of automobile companies in the first half of the century. During World War II, many regional factories were used to produce armaments for the military and following the war, the region reached new economic heights. As with many manufacturing sectors, however, the regional industrial base began to encounter a sharp downturn during the 1970s as foreign competition ushered in a period of significant structural shift in employment. As seen in the statistics below, the structural shift in regional employment continues to be a significant issue, though there has also been employment growth in some service industries in the recent past.

6. The relevant region as defined by NUREG-1555, Section 2.5.2, is as follows, "The relevant region is limited to that area necessary to include social and economic base for (1) the county in which the proposed plant would located and (2) those specific portions of surrounding counties and urbanized areas from which the construction/operations workforce would principally be drawn, or that would receive stresses to community services by a change in residence of construction/operation workers."

Labor force and employment statistics in 2000 and 2006 are presented in Table 2.5-20 for the Michigan and Ohio counties located within the 50-mile region, the Detroit and Toledo areas, and the region as a whole. The Detroit data is based on the Combined Statistical Area (CSA) shown in Figure 2.5-12 that includes the Michigan counties of Monroe, Wayne, Oakland, Genesee, Lapeer, St. Clair, Livingston, Macomb, and Washtenaw. For Toledo, data is for the Metropolitan Statistical Area (MSA) which is shown in Figure 2.5-13 and includes the Ohio counties of Wood, Fulton, Ottawa, and Lucas.

Table 2.5-20 indicates that the 2000 labor force in Monroe County numbered 77,194 and there were 74,756 people employed. The 2000 unemployment rate for the county was 3.2 percent. Just to the north, Wayne County had a 2000 labor force of 952,300 of which 911,069 were employed; this yielded an unemployment rate of 4.3 percent in 2000. To the South, Lucas County had a 2000 labor force of 227,304 with 217,049 people employed; therefore the unemployment rate for Lucas County was 4.5 percent. The entire region had a labor force of 3,091,011 in 2000, of which 2,977,479 were employed, resulting in an unemployment rate of 3.7 percent. The Detroit CSA accounted for 2,700,947 of the regional labor force in 2000 and had a 5.8 percent unemployment rate. The Toledo MSA had a 2000 labor force of 317,744 in 2000 and the unemployment rate was 4.7 percent.

From 2000 to 2006, the Monroe County employment level decreased by 1.1 percent, Wayne County's employment decreased by 10.1 percent, Lucas County's employment decreased by 2.4 percent, and total employment in the 50-mile region decreased by 6.5 percent. The 2006 unemployment rates for Monroe and Wayne counties were 6.5 percent and 8.4 percent, respectively. For the region as a whole, the 2006 unemployment rate was 6.8 percent. As shown in Table 2.5-20, the Detroit CSA had an unemployment rate of 10.1 percent in 2006 and the Toledo MSA unemployment rate in the same year was 8.2 percent.

Table 2.5-21 lists 2000 and 2006 employment by industry for Monroe County, Wayne County, Lucas County, the Detroit CSA, and the Toledo MSA. Also listed is the industry employment for the 50-mile region in 2000. Data in Table 2.5-21 indicate that the manufacturing industry in the region encountered significant employment losses between 2000 and 2006. In Monroe County, manufacturing employment decreased from 18,120 to 14,587 but this was eclipsed by the manufacturing job loss of 40,973 in Wayne County and 107,853 manufacturing jobs lost in the entire Detroit CSA. In the Toledo MSA, manufacturing jobs decreased only slightly during the 2000 through 2006 period while in Lucas County 5,771 manufacturing jobs were lost.

The largest growth for the region occurred in the educational, health and social services industry, and all four of the county and statistical areas listed in Table 2.5-21 realized an increase in employment in this industry sector during the 2000 through 2006 period. Other industries experiencing growth in Monroe County include retail trade, the finance, insurance, and real estate industry, and the arts, entertainment, recreation, and food services industry.

The three Canadian counties that lie within the 50-mile radius of Fermi 3 are Essex, Chatham-Kent, and Lambton. The combined 2001 employment data for these Canadian counties listed by major industry is presented in Table 2.5-22. As with the U.S. portion of the Fermi region, employment in the Canadian counties was concentrated in manufacturing and construction (94,290). Other large industries include health and education (45,195), and the trade industries (43,595).

The largest employers in Monroe County are listed in Table 2.5-23. According to the Monroe County Finance Department, the top three employers in Monroe County in 2006 were Automotive Components Holdings, formerly named Visteon Corporation, (approximately 2,000 employees), Detroit Edison Corporation (approximately 1500 employees) and Mercy Memorial Hospital (approximately 1,300 employees). Employment data for 1998 is also listed in the table and reveals a trend toward increased concentration of total county employment among the largest firms. According to the Monroe County Development Corporation, Automotive Components Holding is scheduled to scale down operations in 2008 through a workforce reduction of at least 1,000.

Table 2.5-24 and Table 2.5-25 show the largest employers for Wayne County and Lucas County, respectively. In Wayne County, the largest employer in 2007 was Ford Motor Company with 42,309 employees; down from the 57,659 people employed in 1998. Ford Motor Company was followed by Detroit Public Schools (17,329 employees) and the City of Detroit (13,593 employees). In Lucas County, the three largest employers in 2006 were ProMedica Health Systems (11,265 employees), Mercy Health Partners (6,723 employees), and the University of Toledo (4,987 employees).

Table 2.5-26 lists the industry employment projections for Michigan and the Detroit MSA in 2014, as made by the Michigan Department of Labor and Economic Growth. In making its projections, the department includes Monroe County as part of the Detroit MSA, along with the counties of Wayne, Lapeer, Macomb, Oakland, and St. Clair (note that this list differs from the counties in the Detroit CSA). According to the Michigan Department of Labor and Economic Growth, employment between 2004 and 2014 will increase by 6.9 percent overall in the Detroit MSA, although manufacturing employment will decline by 11.4 percent and the durable goods manufacturing sector is projected to decrease by 13.4 percent. The overall growth will be driven by the service industries, with professional and business services (18.9 percent), educational and health services (11.2 percent), and the leisure and hospitality industry (10.6 percent) projected to experience the largest growth rates. At the state level, the overall growth from 2004 through 2014 is projected to be 7.9 percent.

Table 2.5-27 shows the 2014 industry employment projections for the Toledo MSA. It is projected that by 2014, there will be an employment decrease of 4,230 in the goods producing sector with manufacturing to experience a decrease of 5,030 jobs. However, service producing industries will experience an employment increase of nearly 26,990 jobs within the Toledo MSA. Table 2.5-28 provides additional employment information for Monroe County by listing recent and expected changes in employment.

The most detailed view of the regional workforce in relation to the needs of the Fermi 3 project during construction and operation is seen when comparing the key occupational requirements of the project (in Sections 4.8 and 5.8) with the available labor force for these occupations.

Concerning the available heavy construction industry craft workers in the region, Table 2.5-28(A) lists the key craft and the location of the primary and supporting union halls that will provide key craft workers to the project. Also listed is the number of craft workers at the identified union halls in 2009, and the direct journeyman wages by craft. At the state level, Table 2.5-28(B) lists the 2006 and projected 2016 labor force at the state level for Michigan and Ohio for several craft occupations that will be required on the Fermi 3 project.

Staffing requirements during the Fermi 3 operational phase will consist of multiple occupational classifications. The 2004 study prepared for the Department of Energy (DOE) titled: "Study of Construction Technologies and Schedules, O&M Staffing and Cost, Decommissioning Costs and Funding Requirements for Advanced Reactor Designs (Volume 1)", called the DOE staffing study herein, lists more than 200 staffing job categories required for the operation of a nuclear power plant, organized into several departments. The functional departments are listed below, and some of the key job categories for each department are also identified:

- Management – includes director positions over O&M and safety, plus various corporate services such as financial support.
- Operations – includes manager of operations positions and support, shift licensed and non-licensed operators, shift supervisors, operations engineers, refueling operators, clerks and administrative support.
- Engineering – includes the engineering manager and administrative support, systems engineers, reactor engineers, component engineers, civil and mechanical engineers, and records clerks.
- Maintenance – includes the maintenance manager and administrative support, electricians and electrical supervisors, mechanics and supervisors, I&C technicians, outage scheduling personnel, outage inspectors, and maintenance procurement workers.
- Outage and Planning – includes the outage and planning manager and administrative support, the nuclear scheduling supervisor, electrical schedulers and planners, mechanical schedulers and planners, I&C schedulers and planners, unit outage coordinator, and turbine maintenance specialists.
- Major Modification and Site Support – includes the nuclear support services manager and administrative support, the construction engineering supervisor, construction engineers, quality inspectors, electrical construction specialists and supervisors, civil/mechanical construction specialists and supervisors, project controls specialists and supervisors, labor support and supervisors, and construction equipment management.
- Organizational Effectiveness – includes the licensing supervisor and engineers, nuclear safety supervisor, and corrective action coordinators.
- Radiation Protection – includes radiation protection manager and administrative support, health physicist technicians and supervisors, radwaste technicians and supervisor, and chemistry technicians and supervisor.
- Training – includes the nuclear training manager and administrative support, operations initial training supervisor and staff, operations continuing training supervisor and staff, and maintenance/rad protection training supervisor and staff.

- Security – includes the protection services manager and administrative support, security supervisors, security officers, safety and loss prevention personnel, and the site emergency planning personnel.
- Supply Chain Management – includes the supply chain manager and administrative support, the warehouse supervisor and storekeepers, receiving and inspection workers, and emergent sourcing specialists.
- Telecommunications – includes the IT manager, business analysts, local area network field services workers, and telecommunications services.

Data at the state level for several occupations that closely correspond with many of the job categories in the DOE staffing study is shown in Table 2.5-28(C). This table indicates the historic and projected labor force and wage data for key occupations in Michigan and Ohio that would include many of the Fermi 3 occupational jobs.

In addition, Table 2.5-28(C) indicates the average hourly wages for each occupation by state. The average hourly rate in 2008 varied widely by occupation, ranging from a low of $12.21 ($2008) per hour for security guards to $47.98 ($2008) per hour for general and operations managers. Additional employment considerations pertaining to the impacts of Fermi 3 during construction and operation will be discussed in Chapter 4 and Chapter 5, respectively.

### 2.5.2.2 **Area Political Structure and Taxation**

The Fermi site is located within the Frenchtown Charter Township in Monroe County. This section discusses the relationship between counties, townships, villages, and cities in Michigan, and provides recent tax information for Monroe County and Frenchtown Township. The main focus of the subsection is Frenchtown Township and Monroe County due to the fact that it is these areas that will be primarily impacted and will receive the majority of the tax benefits generated by Fermi 3.

#### 2.5.2.2.1 **Political Structure**

In Michigan, counties have always been the basic unit of local government and possible configurations include the county commission form, the county controller form and the county executive form. Historically, townships are the oldest subunit area within counties and their roots extend back to the Northwest Ordinance of 1785, which called for surveys that divided the land into six-mile squares (Reference 2.5-7). These areas were organized into political units in Michigan under the Township Act of 1827, which created the position of the township supervisor who also sat on the county board of supervisors. This arrangement was confirmed and the role of township government was further refined in the 1850 Michigan Constitution, when the township offices of supervisor, clerk, highway commissioner, constables, a highway overseer, and justices of the peace were created. Townships were also designated as a corporate body with the right to sue or to be sued in the 1850 Constitution. As opposed to cities and villages, townships and counties do not have home rule powers, meaning that they only have those powers and authority expressly provided or inferred by state law (Reference 2.5-7).

Today, Michigan townships are designated either as general law townships or as charter townships. The charter township is afforded additional discretions not available to the general law township, and charter townships are generally immune from annexation by a neighboring city. General Law townships have no ability to levy an income tax and have stricter limits than charter townships with regard to property taxes that can be levied without voter approval.

By 2000, there were 1242 townships in Michigan, and 127 had adopted the charter township form of government through a vote of the county board or through a citizen vote (Reference 2.5-7). Many townships offer complete public facilities and services including water and wastewater supply and treatment, police and fire protection, and parks and recreational services. Most township revenues are derived from the state, collected from user fees, or generated from interest on investments. Frenchtown Township is a charter township governed by a seven member board. As will be subsequently discussed, the township provides multiple public facilities and services, including fire protection, water, zoning, and parks and recreation (Reference 2.5-8).

Historically, as the state population continued to grow during the 1800s, villages and small cities naturally began to arise. To accommodate the need for local government in such communities, the Michigan Constitution of 1850 called for the state legislature to allow for the incorporation of cities and villages. Between 1850 and 1895, there were 89 cities and 297 villages incorporated in the state. The primary difference between a village and city in Michigan is that cities tend to be larger, and villages remain within the township, meaning that those within the village continue to pay township taxes and have a voice in township governance. Conversely, the formation of a city removes the area from the township government, though city residents continue to pay county taxes and have a voice in county government (Reference 2.5-7).

In addition to the aforementioned classifications, Michigan law allows for the formation of special-purpose districts and authorities if there is a need for services that do not match-up with existing governmental boundaries. Examples can include police and fire services, joint agencies for electric power, parks and recreational authorities, and transportation authorities (Reference 2.5-7).

In general, local government is financed through a number of tax sources, and this revenue is allocated to various account funds. The largest of these funds is usually the general fund that typically generates revenues through ad-valorem property taxes. These taxes generally apply to all non-government and non-church property. The basic unit of taxation is the mill, which is one-tenth of a cent, or 1/1000 of a dollar. In Michigan, the mill levy is applied to 50 percent of the assessed value when determining property taxes (Reference 2.5-7).

Another primary source of local funding in Michigan is the state revenue sharing program in which the state distributes sales taxes collected to cities, counties, villages, and townships. As of 2002, state revenue sharing was determined by the constitutional requirement of 15 percent of the 4 percent gross collections of the state sales tax, and a statutory requirement that 21.3 percent of the 4 percent gross collections of the state sales tax be distributed to local governments (Reference 2.5-7).

Monroe County is divided into nine distinct geographic districts, each of which elects a representative to the Monroe County Board of Commissioners for a two-year term (Reference 2.5-9). Once the Board is elected, a Chairman and Vice Chairman are selected, as is a County Administrator who acts as the Chief Operating officer and is responsible for administrative compliance with Board polices, state laws, and the fiscal integrity of the county (Reference 2.5-10). The Monroe County Board of Commissioners maintains four standing committees:

- Finance Committee. This committee consists of all Board members and is concerned with budgets, expenditures, auditing and economic development.
- Personal Services/Human Resources Committee. This committee is comprised of four members appointed by the Chairman with responsibilities ranging from the health department to housing.
- Physical Resources Committee. This committee consists of four members appointed by the Chairman with duties consisting of management over procurement, roads, drainage, parks and recreation, 911 dispatch, and historic sites.
- Judiciary, Law Enforcement and Public Safety Committee. This committee consists of four members appointed by the Chairman, and oversees the local courts, sheriff, emergency medical services, and emergency management. (Reference 2.5-10)

#### 2.5.2.2.2 **Taxation**

Tax information for Monroe County from 2001 through 2005 is provided in Table 2.5-29, which lists the property tax rate per $1000 (also known as a mil or mil rate) of taxable value in several categories of taxes and for overlapping locations within the county. The school district category had the highest property tax rate in the county, and these taxes averaged 26.80 per $1000 of taxable property in 2005. By way of comparison, the township average rate in 2005 was 2.72 mils, and the total county direct rate was 5.41 mils.

Table 2.5-30 details the value of taxable property within Monroe County by land type, classified by residential, agricultural, commercial, industrial, developmental, and personal property. As of 2005, the total assessed value in the county was $6.9 billion of which $4.1 billion was residential and $1.0 billion was industrial. The total true cash value of property was $13.9 billion.

Table 2.5-31 lists the leading property tax payers in Monroe County in 2006 and 1997. The entity with the highest assessed property value in 2006 was Detroit Edison which had a taxable assessed value of $822,719,335 or 12.6 percent of the total county taxable assessed value (this is down from the 1997 assessed value of $1,178,001,644 when the figure was 31.4 percent of the Monroe County total). There was significantly less taxable assessed value of the second ranked entity, Automotive Components Holding, which had a taxable assessed value of $104,799,157 and accounted for 1.6 percent of the county total and that, as previously mentioned, will undergo a significant downsizing in 2008. Table 2.5-32 and Table 2.5-33 list the largest tax payers for Wayne County and Lucas County, respectively.

Table 2.5-70 shows the Fermi 2 property taxes, nuclear fuel property tax, and the total Fermi 2 property taxes paid from 2002 to 2007. As seen in Table 2.5-70, over the past 5 years, Fermi 2 has paid $142,243,792 in total property taxes. Also, during this same time period the taxes paid by Fermi 2 per year has decreased by approximately $10 million, i.e. Fermi 2 paid $29,506,399 in total property taxes in 2002 and paid $19,057,947 in total property taxes in 2007 (this decline in taxes paid concurs with the declining assessed value of Fermi 2 shown in Table 2.5-31). Table 2.5-71 shows the 2007 millage rate composition for the Frenchtown Charter Township. Fermi 2 is in the Jefferson Resort School District and in 2007 paid a millage rate of approximately 46.7 mils. Of this total, approximately 6.7 mils went to the Frenchtown Township, 13.2 mils went to Monroe County ( including the Monroe Intermediate School District, Monroe Community College, Monroe County Library), 25.0 mils went to the school district (of which 6 mils went to the state), and the remaining 2.8 mills went to the Resort Authority.

Taxable property and the resulting property tax revenues are a major source of the total township revenue. According to Table 2.5-34, property tax revenues accounted for 55 percent of the total Frenchtown Township revenue in 2001, and ranged from 38 percent to 70 percent of the total township revenues in the 1989 through 2001 period. Table 2.5-35 lists the value of taxable property by category in Frenchtown Township as reported in the 2002 township Master Plan. The table indicates that in 2002, the leading category in taxable value was the industrial classification, which accounted for 62 percent of the property value and includes real property values for the utility category (Reference 2.5-11). The residential category accounted for 31 percent of the taxable value of property in Frenchtown Township in 2002.

The Frenchtown Master Plan contains a significant discussion about the tax benefits of the Fermi plant. Key text is provided below:

> Around 1980, Frenchtown Township became the site of Detroit Edison's Enrico Fermi power generation facility located on the shore of Lake Erie. As a result, total SEV [State Equalized Value] of property in the Township increased by 500 percent between 1980 and 1988. In 1989, the Fermi plant (building and land alone) represented fully 74 percent of the property tax base in the Township. While this represented a windfall for the Township, it is in fact a temporary condition… [B]eginning around the year 2000, the taxable value of the Fermi plant began to decline and will continue to decline in coming years. By 2002, the Fermi plant represented only 49 percent of the property tax base in the Township (Reference 2.5-11).

The Master Plan then discusses the trend of residential property accounting for an increasing percent of the overall township property tax base (from 10 percent in 1988 to 27 percent in 2002) and notes that "residential land uses cost more in terms of the services that the local community must deliver than the tax revenue they typically generate." Although the overall residential property value in the township is increasing, as indicated by the rate of increase in residential value exceeding the rate of increase in the number of residential units, the Master Plan makes the following conclusion regarding overall Township funding sources:

> The trends would suggest that it will be important in the future to continue efforts to bring sufficient industrial, office and or commercial development to the Township to partially offset the decline in taxable value occurring at the Fermi Plant. Failure to do so may create a future dilemma between higher tax rates and lower levels of Township services. (Reference 2.5-11)

In addition to property tax benefits accruing to the local community, Table 2.5-72 indicates that significant sales tax revenues are associated with the operation of Fermi 2. The Applicant has estimated that sales tax revenues arising from Fermi 2 operation and maintenance (O&M) and capital expenditures for the years 2002 through 2007 averaged approximately $1.154 million per year in direct sales taxes (those taxes generated by Fermi 2 direct expenditures). These tax revenues were realized by Michigan and Ohio, each of which has a 6 percent sales tax rate.

Also shown in Table 2.5-72 are the estimated indirect sales tax benefits associated with Fermi 2. The Applicant estimates that, between 2002 and 2007, an annual average of $4.44 million in indirect sales tax revenues were generated in Michigan and Ohio.

Table 2.5-36 lists the per capita taxes paid in Michigan and Ohio and ranks the state data relative to other states. Michigan ranks high in terms of per capita corporate income taxes at 9$^{th}$ and tobacco products taxes at 2$^{nd}$. The per capita taxes in Michigan rank toward the bottom in terms of individual income tax at 32$^{nd}$ and motor fuel taxes at 43$^{rd}$, while total per capita taxes rank 25$^{th}$ in the nation. Ohio ranks 21$^{st}$ in the nation in total per capita taxes while ranking 8$^{th}$ in individual income taxes and 22$^{nd}$ in corporate income taxes.

Table 2.5-37 displays Michigan’s general property tax collection broken down by jurisdiction for the years 2004 and 2005, while Table 2.5-38 lists the taxes and fees collected by the state of Michigan from 2001 to 2006.

### 2.5.2.3 **Demographics**

Detailed demographic information for the Fermi region and segments at various distances from Fermi 3 are provided in Subsection 2.5.1. This section will present additional discussion related to the demographics of Monroe, Wayne, and Lucas Counties, plus selected cities within these counties as these communities will be the areas primarily impacted by Fermi 3. Section 4.4 and Section 5.8 provide onsite labor information for the construction and operation periods.

With its location between two MSAs, Monroe County is influenced to the north by Detroit and to the south by Toledo; yet the community has retained its character as a relatively rural area, as approximately 75 percent of the county is cropland, with small and medium sized villages and cities distributed throughout the county (Reference 2.5-12). As seen in Figure 2.5-14, population centers within the 10-mile radius include Woodland Beach (2.9 miles away to the west-southwest of the Fermi site and having a population of 2179); Carleton (9.4 miles northwest and a population of 2,561); Detroit Beach (4.0 miles west-southwest and a population of 2,289); Flat Rock (9.5 miles north and a population of 8,488); Gibraltar (9.5 miles north-northeast and a population of 4,264); Rockwood (7.6 miles north and a population of 4,726); and Stony Point (1.3 miles south-southwest and a population of 1,175). The City of Monroe (5.5 miles away at the closest point to the southwest) is the largest city in Monroe County and the largest city lying within the 10-mile radius. As of 2000, the City of Monroe had a population of 32,229. This population figure included 10,293 people in the labor force, of which 9,938 were employed and 355 were unemployed (an unemployment rate of 2.1 percent) (Reference 2.5-13).

According to the U.S. Census Bureau, the total 2006 resident population of Monroe County was approximately 155,000, equating to 281 people per square mile (an increase of 16 people per square mile from the year 2000). By comparison, the state of Michigan had a population density of 177.7 people per square mile in 2006, a slight increase from the 175 persons per square mile in 2000 (Reference 2.5-14).

In sharp contrast, Wayne County to the north had a 2006 population of 1.97 million and is the most populous county within Michigan and the 11th most populous county in the United States (Reference 2.5-15). The land area is 623 square miles (3,165 people per square mile) and the county is made up of 43 civil divisions. The City of Detroit, the Wayne County seat, is the largest governmental division within the county having a 2006 population of approximately 871,000 (Reference 2.5-16 and Reference 2.5-17). The City of Detroit's land area is 139 square miles (6,267 people per square mile), which accounts for 22 percent of the total land area of Wayne County, and the city includes approximately 50 percent of the county's total population. Detroit is also the largest city in Michigan and the 10th largest city in the United States (Reference 2.5-18).

To the south of Monroe County lies Lucas County, Ohio and is comprised of 340 square miles of land. In 2000, Lucas County had a population density of 1338 people per square mile of land compared to 277 people per square mile for Ohio as a whole (Reference 2.5-19). The largest city in Lucas County is Toledo, which had a 2000 population of approximately 309,000. Toledo's land area is 81 square miles giving it a population density of 3,890 people per square mile (Reference 2.5-20).

#### 2.5.2.4 **Social Structure**

Monroe County is a moderately populated county located between Detroit and Toledo. While Monroe County residents live in a semi-rural area, the City of Monroe and other smaller cities offer local access for the procurement of basic goods, services, and recreational opportunities. For specialized goods and services, the population is able to commute to Detroit or Toledo. Detroit and Toledo also provide regional employment opportunities in a wide range of industries and specialties. Census data indicate, for example, that while 51.1 percent of Monroe County residents are employed in the county, 18.4 percent commute to Lucas County (Ohio) and 17.7 percent of local workers commute to Wayne County (Table 2.5-55).

As the county's second largest employer, Detroit Edison, and the Fermi plant in particular, helps keep the number of local residents working in Monroe County relatively high. The anticipated additions of Fermi 3 will further contribute to regional employment diversity and add to the importance of Detroit Edison as an employer in Monroe County.

### 2.5.2.5 **Housing**

Key housing information is presented in Table 2.5-39 for the 50-mile regional counties, the Canadian districts, and the states of Michigan and Ohio. Monroe County had 56,471 housing units in 2000, of which 53,772 were occupied. The heavily populated Wayne County, just to the north, had 826,145 housing units in 2000; 768,440 of these were occupied. To the south, Lucas County had 196,259 housing units in 2000 with 182,847 of those being occupied. The total number of housing units in the entire 50-mile region was 2,436,635 in 2000; 2,288,055 of these were occupied and there were 148,580 vacant housing units. These vacant houses, plus other housing options, will be more than adequate to support the influx of construction and operational workers; these issues are further discussed in Section 4.4 and Section 5.8, respectively. The state of Michigan had a total of 4,234,279 housing units and Ohio had 4,783,051 housing units in 2000. There were 233,550 housing units in the Canadian area of the 50-mile region.

Table 2.5-40 lists occupancy tenure data for the housing located in the U.S. portion of the 50-mile region. As seen in the table, according to U.S. Census data, approximately 45 percent of the population had moved into their homes in the previous 5 years, and this high percentage is partially a function of the economic downturn in the region that has caused many households to relocate.

Changes in the Monroe, Wayne, and Lucas County housing characteristics from 2000 through 2006 are shown in Table 2.5-41, along with renter and owner cost data. Between 2000 and 2006, the number of units in Monroe County increased by 12 percent, much higher than the 2 percent increase in Wayne County and the 3 percent increase in Lucas County, although the number of units in Monroe County remains far below those in Wayne and Lucas counties. Between 2000 and 2006, the number of vacant units in Monroe County increased from 2,699 units to 4,685, but this 74 percent increase is mild compared to the 115 percent increase in Wayne County. During the same time period there was a 71 percent increase in vacancies within Lucas County. Wayne County had 124,280 vacant housing units in 2006, while Lucas County had 22,938. Housing unit renter costs were comparable between the three counties in 2000 and 2006, with the 2006 monthly cost of a rental home of $695 in Monroe County, $719 in Wayne County, and $594 in Lucas County. Wayne and Monroe County had average monthly mortgage costs of slightly more than $1,350 in 2006 while Lucas County's costs were slightly below these at $1,215.

Table 2.5-42 indicates the adequacy of housing structures in the regional counties in 2000 as well as the totals for Michigan and Ohio. In general, it can be concluded that the housing stock in Monroe County had a lower incidence of inadequacy than the average for Michigan, and was comparable to the average for Ohio. Wayne County, on the other hand, had a significantly higher percentage of housing units lacking plumbing and complete kitchen facilities than either state, as well as a higher percentage of units without telephone service, and a higher percentage of overcrowded units. Lucas County was comparable to Monroe County in the percent of houses lacking plumbing, kitchen, and telephones facilities as well as the sharing the same percentage of housing units with greater than one occupant per room.

More recent housing data is available for the counties in the selected region from the U.S. Census Bureau's American Community Survey. Data for all Michigan counties is provided in Table 2.5-42-A for the year 2007. Data for the Ohio counties is also provided in the table and is either for 2007 or for the period 2005-2007, as not all Ohio region counties were surveyed in 2007.

Table 2.5-42-B includes projections of the number of occupied housing units for the southeast Michigan region. The forecast is made by the Southeast Michigan Council of Governments (SEMCOG) and is from the April, 2008 document 2035 Forecast for Southeast Michigan.

Table 2.5-42-C lists information on the number of manufactured housing or mobile homes in Monroe County as of 2006. Mobile homes, especially those in mobile home parks, will be a primary housing option for workers during the construction of Fermi 3 due to the availability of this type of housing and the affordability of this option (prices for mobile homes in 2006 in Monroe County were generally between $40,000 and $100,000).[7] Available mobile homes together with vacant houses and other lodging alternatives will be options for construction workers relocating to the area temporarily. As of 2006, Monroe County had 29 mobile home parks and 7,451 licensed sites in these parks. There was a 17.2 percent vacancy rate of the sites surveyed in 2006, up from 14.3 percent in 2004.[8] When applied to the 7,451 licensed mobile home sites, the estimated number of vacant mobile home sites in 2006 was 1,282.

Table 2.5-42-D lists the total number of manufactured home parks and sites for Southeast Michigan in 2000 and 2006. In 2006, there were 74,521 manufactured housing sites in 285 mobile home parks in Southeast Michigan. The number of sites in 2006 represents a 6.5 percent increase compared to the number of sites in 2000.

Table 2.5-42-E lists the building permit activity for Southeast Michigan from 1989 through 2008, including the number of new building permits issued, the number of demolitions, and the net change in housing. As shown in the table, there has been a dramatic decrease in the number of building permits for new housing in 2007 and 2008, and this is attributed to the national economic downturn as well as the worsening regional economy. In 2008, there was a net decrease of housing units, and this was the first time in the 20-year period that there has been a net decrease in regional housing units.

Table 2.5-42-F lists short term accommodations within 50 miles of Monroe City. As seen in the table there are over 375 accommodation establishments including, hotels and motels, bed and breakfast, cabins and cottages, condos, historic inns, and campgrounds.

Section 4.4 provides further discussion on workers requiring temporary and permanent housing during construction phase, while Section 5.8 discusses workers need for permanent and temporary housing during the operation phase.

### 2.5.2.6 **Educational System**

The Monroe County educational system includes nine public school districts, two charter schools, fifteen parochial and private schools, and the schools in the Monroe County Intermediate School

7. *2006 Annual Building Activities Report*, Monroe County Planning Department, p. 42.

8. *2006 Annual Building Activities Report*, Monroe County Planning Department, p. 43.

District (ISD). Key statistics for the school districts and charter schools are provided in Table 2.5-43 (Table 2.5-44 and Table 2.5-45 show the districts, and the number of students and schools per district for Wayne County and Lucas County, respectively). As shown in the Table 2.5-43, there are 55 schools among the districts and academies listed for Monroe County. The total enrollment in these schools was 25,963 in 2005-2006 and there were 1435.1 full time equivalent teachers. The resulting average student/teacher ratio was 18.1, although the ratio in the various districts ranged from a low of 10.4 to a high of 19.6. The student/teacher can be used as a capacity indicator but ratio reflects the teachers' workload and indicates the availability of teachers to the students; therefore the lower the ratio the higher the availability of services a teacher may offer a student. Monroe County's 18.1 student/teacher ratio is a little above the 2005-2006 national average of 15.7 and Michigan's 17.4 (Reference 2.5-134). But even though Monroe County's student/teacher ratio is a little higher than the state and national average local school officials from Monroe ISD, Monroe Public Schools, and Jefferson Public School foresaw no problems stemming from capacity related issues. When asked if there respective districts foresaw any capacity issues they responded that at this time there is constant or declining enrollment and that there is capacity for future growth.

The school districts and charter schools listed in Table 2.5-43 benefit from the activities of the Monroe County ISD that, among its other duties, acts as a regional agency connecting local school districts with the Michigan Department of Education to provide various services that individual school districts may not be able to afford independently. Special services include communications and information support services, a comprehensive health program, curriculum consultation, special education services, diagnostic support, and early childhood special education support among other services (Reference 2.5-21).

Table 2.5-46 presents revenue and expenditure data for the school districts and charter schools in Monroe County in the 2004-2005 school year. The Monroe Public School District had the largest budget, with revenues of $60.4 million, followed by the Monroe ISD, with revenue of $42.8 million. Table 2.5-47 compares median expenditures per student in Michigan, Ohio, and the U.S. Data indicate that the median expenditure per pupil in the U.S. was $9,392 in 2004-2005 compared to $9,103 in Michigan and $8,687 in Ohio.

The demographic breakdown of the school population within Monroe County is as follows: nursery school and preschool: 1,545 students; kindergarten: 2,260 students; elementary school (grades 1-8): 16,168 students; high school (grades 9-12): 9,365 students; and college or graduate school: 8,258. For grades 1 through 8, 13.2 percent of the students are enrolled in private schools versus the state average of 11.2 percent. Students in grades 9 through 12 have a private enrollment rate of 8.5 percent compared to 8.7 percent at the state level (Reference 2.5-22).

The largest public school districts within the region are the Detroit City School District and the Toledo City School District. To the north of Monroe County, the Detroit City School District has a total of 235 schools spanning pre-kindergarten to twelfth grade. The student population for the district is 133,255 with 7187.2 full-time equivalent (FTE) classroom teachers giving the district a student/teacher ratio of 18.5. To the south, the Toledo City School district has 58 schools covering grades pre-kindergarten to twelfth. The district educates a total of 30,423 students with 1852.1 FTE classroom teachers equating to a 16.4 student teacher ratio.

In addition to the high schools and elementary schools, there are a number of colleges within Monroe County. These include: Monroe County Community College (Monroe), Monroe County Community College-Whitman Center (Temperance), Siena Heights College (Division of Monroe Community College), Eastern Michigan University (Monroe), and Spring Arbor University. The largest of which, Monroe County Community College was established in 1964 goal with the objective of providing a high quality preparatory education for those planning to attend a 4 year university, as well as offering occupational programs. The current enrollment at this college is 4433 students, with 85.6 percent of the student being residents of Monroe County (Reference 2.5-23).

Other major colleges in the region include: Wayne State University (Detroit), University of Detroit-Mercy (Detroit), University of Michigan (Ann Arbor), University of Michigan-Dearborn, and Eastern Michigan University (Ypsilanti) (Reference 2.5-24), and the University of Toledo and Bowling Green State University in Ohio. The largest of these is the University of Michigan, which had an enrollment on its Ann Arbor campus of 40,025 in the fall of 2006, followed by Wayne State University with an enrollment of 33,137 in the fall of 2005 (Reference 2.5-25 and Reference 2.5-26).

In Monroe County, there are 103,857 individuals aged 25 and over. In 2006, there were 2,770 people with less than 9$^{th}$ grade education, 10,451 with a 9$^{th}$ to 12$^{th}$ grade education but no diploma, 39,147 high school graduates (including equivalency), 25,997 with some college but no degree, 9,278 with an Associate's degree, 11,715 with a Bachelors degree and 4,499 people with graduate or professional degrees (Reference 2.5-22).

#### 2.5.2.7 **Public and Private Recreational Facilities**

Recreational facilities and programs in Monroe County are administered by a ten member Parks and Recreation Commission, who are appointed by the County Board of Commissioners. The Parks and Recreation Commission develop a 5-Year Recreation Plan for the county, with the most recent plan drafted in January 2008. The mission statement of the Commission, as stated in the Recreation Plan, is to:

> …plan, acquire, develop, and maintain, in cooperation with all interested individuals and groups, a responsive, efficient, and creative natural resource based park and recreation system available to all citizens, composed of a variety of services, park areas and special facilities that contribute to the well-being of the individual, the family, and the social and economic health of the Monroe County community. (Reference 2.5-12)

The Commission works closely with the Monroe County Planning Department and the Purchasing and Property Maintenance Division, with the relationship between these groups and the county Board of Commissioners illustrated in Figure 2.5-15.

Monroe County has a well-developed system of recreational facilities and programs. The recreational facilities in the county are listed in Table 2.5-48, where additional information on location, type of facility, and size is provided. Within Monroe County, there are five park classifications. These classifications and the amount of acreage devoted to these classifications include: 1) county parks (221 acres), 2) state owned parks (7413 acres), 3/4) city and township parks (821.5 acres), and 5) neighborhood and subdivision parks (233.6 acres) (Reference 2.5-12).

In addition, Monroe County has nine campgrounds occupying 1593.7 acres, a total of thirty-seven marinas with 3946 boat slips, ten public access sites occupying 1410.5 acres, fifteen shooting ranges and sportsmen's clubs, twenty-five golf courses/driving ranges, and eleven miscellaneous recreational facilities (Reference 2.5-12).

Table 2.5-49 lists recreational and lodging facilities within the 10-mile radius, and Figure 2.5-16 depicts several recreational facilities within the vicinity of Fermi, including wildlife conservation areas that provide hiking, fishing, and other recreation opportunities. The closest areas to Fermi 3 that are used for recreation are along the Lake Erie shore and are associated with the resort communities at Stony Point Beach, about 2 miles south, and Estral Beach, 2 miles northeast. Swimming and some boating activity occurs in these areas (Reference 2.5-27). The Detroit River International Wildlife Refuge (DRIWR) extends along the shore of Lake Erie from the River Raisin to the south of the Fermi site to southern Detroit north of the Fermi site. The area encompasses 656 acres of the Fermi site as part of the refuge, that part of which is not open to the public (Reference 2.5-28).

In addition to the areas described above, the following areas in the Fermi 3 vicinity are available for recreation (note that the utilization of these facilities is not tracked):

- Swan Creek: 0.52 mile north of the Fermi site (just north of the Fermi property boundary)
- Pointe Mouillee State Game Area: 3.1 miles northeast
- William C. Sterling State Park: 4.8 miles south-southwest
- Captain Norman Heck Park: 5.5 miles southwest
- Raisin River Golf Club: 5.4 miles southwest
- Lake Erie Metropark (Wayne County): 6.6 miles north-northeast
- Monroe Multi-Sport Complex: approximately 7 miles southwest in Monroe

#### 2.5.2.8 **Local Land Use Planning and Zoning**

The Monroe County Planning Department & Commission (Planning Commission) is responsible for a wide range of county functions, including land use planning, zoning, specialized research, interface with state and federal agencies, and economic development. The Planning Commission consists of 11 members appointed to three year terms by the County Board of Commissioners.

One of the key agencies that interface with the Planning Commission is the Southeast Michigan Council of Governments (SEMCOG). This regional agency aims to solve regional government problems, increase governmental efficiency, promote economic development, improve the region's water quality and transportation system, perform statistical analyses, and to generally help members improve the quality of life of the region's residents. SEMCOG receives funding from federal and state grants, contracts and membership fees. There are 155 current members of SEMCOG including Monroe, Livingston, Macomb, Oakland, St. Clair, and Washtenaw Counties (Reference 2.5-29 and Reference 2.5-30).

In its zoning function, the Planning Commission is mandated to review all township zoning applications (Reference 2.5-31). Official cases are given to the Planning Commission for review after a Township Planning Commission reviews the case and before the final decision is made by the Township Board. The County Planning Commission's recommendations on a zoning case are provided to the townships, which make the final ruling through the Township Board. In 2004, the Planning Commission provided recommendations on 68 zoning-related cases. The zoning cases reviewed are shown in Table 2.5-50, which indicates that changes in zoning ordinance texts constituted 26 of the total cases, followed by 18 reviews involving single family residences and 11 cases involving commercial zoning issues. From 2000 through 2004, the average percent of cases each year that the County Planning Commission agreed with the Township Planning Commission recommendation was 82.6 percent (non-weighted average), and the final Township Board decision agreed with the County Planning Commission recommendation an average of 85.6 percent of the time (Reference 2.5-31).

While much of Monroe County is zoned for rural land use and 75 percent of the land area is devoted to crop production, there are a number of areas zoned for industrial and utility use (Reference 2.5-12). Frenchtown Township also includes significant parcels of land zoned for industrial and utility use, and the 2002 zoning in effect for the township can be seen in Figure 2.5-17. This figure indicates that the Fermi site in the extreme eastern part of the township and bordering on Lake Erie has a designated land use of utility as is a corridor extending from the Fermi site to I-75 and following the highway for much of its route through the township.

Table 2.5-51 indicates the acreage devoted to various land uses in Monroe and Wayne Counties, and in Frenchtown Township in 1990 and 2000. In Monroe County, the largest classification was agricultural (more than 62 percent of the acreage in 2000), though the category declined by 7 percent from 1990. This was followed by residential land use (14.8 percent), woodlands and wetlands (11 percent), non residential (5.7 percent), and grassland and shrub (3.4 percent). Industrial and commercial/office land uses, while each comprising less than 1 percent of the overall acreage in 2000, nevertheless grew at respective rates of 41 percent and 32 percent between 1990 and 2000 in Monroe County. In Frenchtown Township, agricultural land use accounted for 51 percent of total acreage in 2000, followed by residential land use (19 percent), woodland and wetland land use (9.4 percent of all acreage), and transportation and utility uses (4.5 percent).

Figure 2.5-18 indicates the future land use plans for Frenchtown Township as presented in the most recent (2002) Master Plan. As seen in the figure, the Fermi site land use is expected to remain classified as utility. South of the site, the land is anticipated to remain a low and medium density residential area. The Fermi site is expected to be surrounded primarily by agricultural lands, open areas and woodlands to the west and north, with the possibility of a waterfront opportunity area northwest of the site. Regarding this possibility, the Master Plan states:

> The Master Plan recommends that the Township continue to search for new lake front recreation opportunities. Township acquisition of lakefront property is one alternative. As noted later, a more feasible approach might be to allow private mixed use development along the waterfront, where such development would maximize exposure, access, and orientation to the lake. Two areas where this type of mixed use development would be

feasible are designated on the Future Land Use Map: in the far northeast corner of the Township, and south of Point Aux Peaux and Brest Roads (Reference 2.5-11).

The Master Plan also anticipates pursing development and allocating significant parcels to industrial use, primarily the land area in the northern two-thirds of the township just east of I 75. Related to utility land use, the Master Plan states “The Future Land Use Map acknowledges the continued presence of the Enrico Fermi Energy Center by designating the entire complex as “utilities.” (Reference 2.5-11)

### 2.5.2.9 Social Services and Public Facilities

#### 2.5.2.9.1 Water and Sewer Services

The Frenchtown Township Water Treatment Plant, constructed in 1994, draws water from Lake Erie at a joint intake facility at Pointe Aux Peaux Road; this intake facility is shared with the City of Monroe. The plant is operated by Frenchtown Township and recently expanded the capacity from 4 million gallons per day (mgd) to 8 mgd. The current capacity is expected to be sufficient for at least the next 20 years. Table 2.5-52 indicates that the average daily demand was 2.10 mgd in 2001, and the maximum day demand in 2001 was 3.73 mgd, below the all time high of 3.88 mgd in 1998 (Reference 2.5-11).

The 2002 Master Plan indicated that the water distribution system in the township included more than 70 miles of water transmission main and two 500,000 gallon elevated storage tanks. Areas served by the township water supply plant and transmission mains in 2002 are indicated in Figure 2.5-19.

Sewer service in Frenchtown Township is provided by the City of Monroe. Waste water is collected and sent to the City’s treatment plant located on the Raisin River on the east side of the city. Figure 2.5-20 illustrates the areas within Frenchtown Township served at the time the Master Plan was prepared. The treatment capacity at the plant is 24 mgd in dry weather conditions and 30 mgd during storm conditions, although flows of more than 50 mgd have been documented during major storm events, indicating that the collection system is not water tight and is subject to overload during storm events (Reference 2.5-11). According to the 2002 Master Plan, a sanitary sewer capacity analysis was underway for the township, and the study would include recommendations to allow for continued growth.

#### 2.5.2.9.2 Police Service

Police Service in Monroe County is provided by the Monroe County Sherriff’s Office, the City of Monroe, and the Michigan State Police. The Sheriff’s Office includes 80 officers, 30 of whom serve various villages, cities and townships that have contracted for additional police services. These officers are under the direction of a commander who supervises the lieutenants in command of the three district offices, and the five sergeants who serve as shift supervisors for the 24-7 operation (Reference 2.5-32). The Monroe County Sheriff’s Office also has a number of specialty divisions consisting of an Administrative Division, a Detective Bureau, a Marine Unit, a Special Response Team, a Youth Services Team, and a Traffic Services Division that enforces traffic laws on secondary roadways in Monroe County (Reference 2.5-33). At this time, according to officials of the Monroe County Sheriff's office, there are no plans for expansion. Rather, they are trying to maintain status quo. They indicated that due to the fact that Monroe County recently tightened finances and that the sheriff's department currently receives the largest portion of the budget for law enforcement, there would be no new hirings.

To facilitate rapid response, the Sheriff's Office has three district offices that serve specific portions of the county. District One services Frenchtown, plus the townships of Ash, Berlin, Monroe, and Raisinville. An additional District One substation exists in Monroe Township at the Inmate Dormitory, on East Dunbar Road, east of LaPlaisance Road. The district is staffed by 20 Deputy Sheriffs who are assisted by detectives from the Monroe office (Reference 2.5-34). According to the 2002 Frenchtown Township Master Plan, the Monroe County Sheriff's Office also provides patrol services through contractual arrangements with Frenchtown Township (Reference 2.5-11). Four officers are specifically assigned to Frenchtown Township as contract officers, along with a lieutenant and a detective. The southern portion of the Township is also served by officers assigned to the Monroe Township substation.

District Two of the Monroe County Sheriff's Office is headquartered behind the Bedford Township Hall and encompasses Lasalle, Ida, Whiteford, Bedford and Erie Townships. Current staffing at this District consists of 12 uniformed officers and 2 detectives (Reference 2.5-35).

District Three is headquartered in the Dundee Township Hall with substations in the City of Petersburg and in the Village Offices in Dundee. Deputies assigned to these offices provide police services on a contract basis to the City of Petersburg and the Village of Dundee. The district is comprised of Dundee, Summerfield, Milan, London, and Exeter Townships (Reference 2.5-36).

Primary roadways in Monroe County are served by officers in the Second District of the Michigan Highway Patrol. This district includes six counties that also encompass Detroit and areas north. The Second District has a local office in Monroe; Monroe Post #28 (Reference 2.5-37).

Monroe County has two existing jails. One is located on Second Street in the City of Monroe and is linked to the courthouse via a skywalk. The jail was built in 1981 and was originally designed to hold 127 inmates. Subsequent renovations increased the capacity to 183 inmates. Nevertheless, overcrowding became an issue and in 1999, Monroe County purchased 155 acres of land on East Dunbar Road and began the construction of two 80 man dormitory style-housing units plus an administrative support unit. The administrative support unit was constructed to support a prisoner population of 400 and includes medical, classroom, training, maintenance, administration and public areas (Reference 2.5-38).

The City of Monroe also maintains a police force, which dates to 1837. Currently, the city police department has a staff of 48 officers plus 10 civilian support personnel, who maintain records, enforce parking regulations, operate computers and manage patrol vehicles. The department provides uniform road patrol, consisting of officers assigned to one of three main shifts and providing 24-hour police coverage. Other units include the Multi-Jurisdictional Drug Task Force, School Resource Officers, Traffic & Safety, the Detective Bureau, Court Officers, Juvenile Officers, the K-9 Unit, and Motorcycle Units. The city police department is located in the same building as the Monroe County Sheriff's Department (Reference 2.5-39)

To the north, the Wayne County Sheriff's Department has more than 1,300 officers making it the second largest law enforcement agency in Michigan (Reference 2.5-40). The Wayne County Sheriff's Department also operates a 2,600 inmate capacity jail, as well as services in the areas of fugitive apprehension, internet investigations, border enforcement, child rescue, drug and prostitution enforcement, and other services. The City of Detroit Police Department consists of a total of 4,154 full time sworn personnel (Reference 2.5-41). The Lucas County Sheriff's Office has 515 employees including correction officers, deputy sheriff and clerks, 9-1-1 operators, dispatchers, medical staff and clerical staff. (Reference 2.5-42)

#### 2.5.2.9.3 **Fire Protection**

Fire protection in Monroe County is provided through 17 fire departments organized at the township and city level; in total, there are 22 fire stations located in the county. Table 2.5-53 lists and describes these fire stations and Figure 2.5-21 shows the fire districts within the county. In total, there are 447 firefighters within Monroe County including 240 volunteer firefighters, 144 paid per call firefighters, and 63 career firefighters. Most of the fire departments are manned by volunteer staff; however, the Monroe City Departments are classified as having career firefighters, and the Frenchtown Township Fire Department employs mostly career firefighters. The Frenchtown Township fire districts on Figure 2.5-21 are District 32-1 and District 32-2. District 41 is the City of Monroe.

The Frenchtown Township Fire Department has a total of four fire stations and 22 career firefighters. There are also 17 paid per call firefighters and one non-firefighting employee. Figure 2.5-22 indicates the location of the four stations in the township, one of which is adjacent to and southeast of Fermi 3. This is township Fire Station No. 4 is listed in the 2002 Master Plan as being more than 25 years old. Stations 1 and 2 are staffed by full time professional firefighters, while Stations 3 and 4 are staffed by part time, paid per call firefighters (Reference 2.5-11). Officials from Frenchtown Township Fire Department indicated that there are no plans for expansion at this time.

The nearby City of Monroe Fire Department has three stations and 41 career firefighters. An engine company is deployed at each station, and two of the stations also house ambulances (Reference 2.5-43).

To help the firefighters in the county, the Monroe County Fire Association Inc. was created to further develop skill sets such as firefighting and rescue work and represents all the firefighters within Monroe County. The association educates by gathering and dispensing information to members and also promoting legislation for the betterment of all departments. The twenty-five member fire departments and six non-fire department members represent every fire department within the county, as well as Washtenaw County, Wayne County and Washington Township in Ohio (Reference 2.5-44).

There are numerous fire departments to the north and south of Monroe County. To the north, Wayne County has a total of 45 fire departments, the largest of which is the City of Detroit Fire Department. The firefighting division of the Detroit Fire Department has approximately 1141 firefighters located at 45 stations around the city. To the south, Lucas County has 16 fire departments, the largest of which is the Toledo Fire Department with 521 firefighters and 37 non-firefighting employees. The Toledo Fire Department has an average minimum daily staffing of 103 Firefighters and Officers housed at 17 stations within the city.

#### 2.5.2.9.4 **Community Emergency Planning**

The emergency planning for Monroe County is conducted by the Emergency Management Division. The division is responsible for planning and coordination of large-scale emergency and disaster events that include the following categories:

- Natural
- Technological
- National Security
- Nuclear

In addition to the aforementioned planning and coordination efforts the Emergency Management Division also provides the following services to the county:

- Maintenance of an emergency operations center that can be activated 24 hours a day, 7 days a week
- Maintenance of a database that allows for the procurement of needed resources in emergency
- Public education programs to educate the community about emergency situations
- Provide emergency information to the public in times of emergency
- Coordinates volunteer organizations
- Maintains and operates a county-wide early warning siren system; comprised of 105 outdoor sirens (Reference 2.5-45)

#### 2.5.2.9.5 **Hospital and Ambulance Service**

Hospital service to Monroe County is provided by Mercy Memorial Hospital in the City of Monroe. The address is 718 North Macomb Street, Monroe which is just off Highway 125. The hospital has 136 full-time physicians and 185 full-time equivalent registered nurses. There are 235 licensed beds in the hospital. The average daily patient census for Mercy Memorial Hospital for the time period of December 2007 thru February 2008 was 114 patients. This equates to an average of 48.5 percent capacity utilization. If Monroe County’s average annual growth rate in total population of 0.94 percent is applied to the average daily patient census, the 2020 average daily census would be approximately 128 patients and the hospital would be operating at a 54.5 percent capacity utilization level. The emergency room is staffed 24-hours a day, seven days a week through the

Schumacher Group, which is under contract with the hospital. The physicians manning the emergency room are approved by the local physicians and the hospital's Board of Commissioners.

Mercy Hospital offers a wide range of services including cardiac rehabilitation, pulmonary rehabilitation, family-centered birthing place, occupational health services, sleep disorder center, pastoral care, pain management, rape crisis center, health information management, nutrition and diabetes education, outpatient surgical center, hospice care, comprehensive mental health, 24-hour emergency care, rehabilitation services, home respiratory care, home health care, nursing center, lab locations, and a forensic nurse examiner.

In addition to Mercy Memorial Hospital, there are fifteen other hospitals/healthcare facilities in Wayne County excluding Detroit, sixteen within Detroit, and an additional twelve in Toledo. A list of regional hospitals and their addresses is provided in Table 2.5-54. The largest of these regional facilities is the Detroit Medical Center, which has more 2000 licensed beds and over 3,000 affiliated physicians and is the biggest non-governmental employer in the City of Detroit. The nearest burn unit in the region is St. Vincent's Hospital in Toledo, but most burn patients from Monroe County are usually sent to the University of Michigan Hospital.

The Monroe County Health Department also provides multiple health-related services to the community. Located at 2353 South Custer Road in Monroe, the Health Department's mission is to protect the public's health through health promotion, disease prevention, and linking people to personal health services (Reference 2.5-46).

Ambulance service and 9-1-1 emergency response for most county residents (except for the City of Monroe which is served by the City of Monroe Fire Department) is provided by Monroe Community Ambulance (MCA), which has ambulances stationed around the clock at strategic locations in the county, such as at selected fire stations, to provide timely response to medical emergencies. Paramedic emergency ambulances are staffed with experienced paramedics and outfitted with advanced lifesaving equipment. MCA also has a program called MCA Plus in which county residents can pay a tax deductible membership fee and avoid paying a user fee or deductible payment should medically necessary ambulance service be required within the county or to the out-of-county service area that includes six other counties and 2,500 square miles (Reference 2.5-47).

### 2.5.2.10 **Transportation System**

#### 2.5.2.10.1 **Highways**

There is a highly developed transportation network in the 50-mile Fermi region, with the network laid out in a predominantly north-south direction that connects Detroit with areas to the south. The roadway network in Monroe County is illustrated in Figure 2.5-23. The major route that passes through the Frenchtown Township is Interstate 75, which is the major transportation link between Detroit and Toledo, and extends southward to its termination in southern Florida. Interstate 275 also splits from I-75 in Monroe County, heading toward the western portion of Detroit in Wayne County. Two other major highways within Frenchtown Township and Monroe County include U.S.

24 (also called North Telegraph Road due west of the Fermi site) and M-125 which merges into U.S. 24 due west of the Fermi site (Reference 2.5-11).

Monroe County had 1882 miles of roads and 345 bridges in 2006 (Reference 2.5-48). The transportation network within Frenchtown Township was comprised of 190 miles of roads with 27 bridges (Reference 2.5-49). The well-developed transportation network provides several commuting alternatives to the site from within Monroe County and beyond.

From the north, the primary route to the Fermi site would likely be the southbound I-75 exit at the Newport Road/Swan Creek Road, then proceeding southeast to the site via Swan Creek Road, followed by heading south on North Dixie Highway, and finally taking Fermi Drive southeast into the site. Traffic heading south on I-275 could also use this route after exiting to north-bound I-75 and taking Swan Creek Road. For traffic traveling to the site on I-75 from the south, the primary route would be to take the North Dixie Highway exit near the City of Monroe, and then travel northeast to Fermi Drive. These roads near the Fermi site can also be accessed from U.S. 24, and M-125.

In terms of comparing traffic levels on North Dixie Highway with the estimated capaCity of the highway, the *Highway Capacity Manual* (HCM) issued by the Transportation Research Board is widely used to estimate highway capacity. While the capacity level of a two-lane rural highway is difficult to estimate (as it depends on multiple factors such as directional flow, vehicle mix, lighting conditions, physical dimensions of the highway, weather, posted speed limit, and other factors), a reasonable maximum capacity of 2800 passenger car equivalents per hour can be assumed under ideal conditions. (Reference 2.5-135) If this figure is reduced to 1000 per hour to account for the fact that ideal conditions are seldom present on any road and the conditions on North Dixie Highway, this would imply a maximum daily volume of approximately 24,000 for North Dixie Highway, meaning that on a 24-hour basis, there remains ample excess capacity. Although, this measure can be misleading because it does not capture short-term problems that could be present during peak traffic flow periods.

Figure 2.5-24 lists 24-hour traffic counts for the roadway network in Frenchtown Township and near the Fermi site with the highest traffic counts on North Dixie Highway occurring near the City of Monroe. Figure 2.5-25 shows the 24-hour traffic counts near the Fermi site with the two-way 24-hour traffic count on North Dixie Highway near Fermi Drive at 5,580 vehicles.

Table 2.5-55 includes data reflecting the commuter populations of Frenchtown Township and Monroe County. Specifically, the table indicates the commuting origin and destination of community residents, and the origin of those working within Frenchtown Township and Monroe County. In 2000, there were 7,413 people working within Frenchtown Township. Of this figure 1838 workers originated from within the township, followed by 1520 who originated from the City of Monroe, and 779 workers who originated from Monroe Township. Regarding the destination of the 9,518 Frenchtown Township resident workers, 2,276 workers commuted to the City of Monroe, 1,838 workers stayed within Frenchtown Township, and 635 workers commuted to Monroe Township.

In 2000, there were a total of 48,526 people working within Monroe County; 35,202 workers were Monroe County residents; followed by 4,456 workers originating from Lucas County, Ohio; and

4,111 workers originating from Wayne County. The destinations of the 68,835 employed residents within Monroe County are as follows: 35,202 worked within Monroe County, 12,654 workers commuted to Lucas County Ohio, and 12,161 workers commuted to Wayne County.

Table 2.5-56 denotes the number and methods of those who commuted to work in Frenchtown Township and Monroe County in 2000. In Frenchtown Township, 8,381 workers drove alone, 826 workers carpooled, and 110 people walked to work. In Monroe County, 60,671 workers drove alone, 5627 workers carpooled, and 704 people walked to work.

There are multiple road and bridge development projects outlined in the Michigan Department of Transportation 5-year plan from 2008-2012; Table 2.5-57 lists each project and the first year of construction. In addition, Table 2.5-58 lists proposed transportation projects within Monroe County. Not included on this list is the recent I-75 reconstruction as it enters Wayne County. Also Dixie Highway was undergoing repavement construction work just north of Fermi in August 2007.

Section 4.4 and Section 5.8 address the number of daily commuting workers during operation and construction, respectively.

2.5.2.10.2 **Public Transportation, Airports, Ports, and Railways**

In addition to private commuting, Monroe County has a public bus transportation system; the Lake Erie Transit (LET). LET has 68 employees, 28 vehicles and provided transportation for 384,768 passengers in the fiscal year 2006 (Reference 2.5-50). Within Monroe County the LET has eight distinct routes which transports passengers to most of Monroe's popular destinations, and for the Townships of Bedford and Frenchtown LET offers a Dial-a-ride service. This service provides curbside pick-up to customers and takes them to their destination within the respective township or to another one of LET's fixed route lines (Reference 2.5-51).

The region contains a number of airports, the largest of which is the Detroit Metropolitan Wayne County Airport (DTW) located 19 miles north-northwest of the Fermi site. DTW occupies 6700 acres and has six runways ranging from 12,000 to 8000 feet and 150 passenger gates. In 2006, DTW had a passenger volume of 36 million passengers which ranked as 10$^{th}$ largest in the United States and the 19$^{th}$ largest in the world. DTW contributes to an estimated $7.6 billion per year economic impact within the Detroit area (Reference 2.5-52).

Another commuter airport in the region is Coleman A. Young International Airport, formerly known as Detroit City Airport, located north-northeast of the Fermi site. Coleman A. Young is a two runway airport with a 53,000 square foot passenger terminal and an average daily operation of 225 commercial corporate and private flights (Reference 2.5-53). To the south is Toledo Express Airport, which has four runways, 96 aircraft based on the field and serves more than half a million passengers annually. The Toledo Express Airport recently began a 4-year $22 million renovation project (Reference 2.5-54 through Reference 2.5-56).

In addition to these major passenger airports, the Willow Run Airport is located twenty-four miles to the northwest of the Fermi site. Willow Run is one of the nation's largest airports for handling cargo air freight. Willow Run consists of five runways that handle more that 400 million pounds of cargo annually. Table 2.5-59 lists additional smaller airports that serve Monroe County (Reference 2.5-57).

There is a significant amount of barge traffic on Lake Erie near the project site, most of which is in transit to or from the Port of Monroe, the Port of Detroit, or the Port of Toledo, all of which are a part of the Great Lakes St. Lawrence Seaway System. Since 1959, the St. Lawrence Seaway has provided a link between the world and the Midwest. The Seaway System is 2,000 miles long and is responsible for annual commerce exceeding 200 million net tons. In addition, over thirty million people rely on this system either for recreation or commerce.

Table 2.5-60 provides data for the ports of Monroe, Detroit, and Toledo. The Port of Monroe is the closet to the Fermi site, located approximately 7 miles to the southeast. In 2003, it handled just over a million tons of cargo, of which more than 80 percent was coal. The Port of Monroe is serviced by two railroads, has immediate access to Interstate 75, and is within five miles of a regional airport. The Port of Detroit, as of 2001, handled an overall annual tonnage of just under seventeen million, and the Port of Toledo in 2003 handled just under ten million tons of cargo.

The Canadian National Railway (CN), the CSX Transportation (CSX), and the Norfolk Southern Railway (NS) all run through Frenchtown Township in a southwest to northeast direction. The CSX runs parallel to Telegraph Road (US-24) while NS and the CN railways run in a narrow corridor just east of I-75 (Reference 2.5-11 and Reference 2.5-58).

#### 2.5.2.11 **Distinctive Characteristics**

The Fermi 50-mile region is distinguished by a rich history that pre-dates the U.S. Constitution. One of the highlights of this history is that the region helped lead the nation's industrial economic boom in the 20$^{th}$ century. As the transportation network advanced over the past several decades, Monroe County has become increasingly integrated with the larger metropolitan areas to the north and south, yet has been able to largely retain a rural atmosphere. This section briefly describes some of the regional history and distinctive characteristics of the region.

The history of Monroe County is linked to French missionaries who first came to Monroe County as early as 1634, though a trading post and fort were not established in the county until 1778. The first settlement in the county was called Frenchtown and consisted of one hundred French families who came to the area from Detroit and Canada. Frenchtown has the distinction as the site of one of bloodiest battles of the War of 1812. Following the war, Monroe County was established in July 1817 and named in anticipation of President James Monroe's visit to the Michigan territory (Reference 2.5-59).

Today, tourism in Monroe County remains linked to this history as can be seen in the various museums and historical sites that attract tourists each year. One of the more popular museums is Monroe County Historical Museum. It displays early Monroe history, artifacts of General George Armstrong Custer, Indian lore, and other region specific cultural relics. Other Museums include: Old Mill Museum, Monroe County Labor Museum, and Martha Baker Country Store Museum (Reference 2.5-60). There are also a number of historic sites in the area. Some of the more famous ones include the Navarre Anderson Trading Post, Michigan's oldest residence and considered the best example of French colonial architecture in the state. The River Raisin Battlefield Visitor Center, a remembrance to the largest battle fought in the War of 1812. The Custer Home purchased by General Custer and his brother are also tourist attractions (Reference 2.5-61). In addition to the aforementioned museums and sites, Table 2.5-61 provides a list of local tourist and recreational attractions in Monroe County.

The history of Detroit is also storied. In 1701 a French Officer named Antoine de la Mothe founded a settlement called Fort Detroit, but during the French and Indian War (1760), British troops gained control and changed the name to Detroit. The United States eventually took control of Detroit in 1796 under the Jay Treaty, and most of the settlement subsequently burned down in 1805. During the rebuilding, Detroit became the capital of Michigan; and continued in this role until 1847. Also during this period, Detroit became a key stop on the Underground Railroad.

Detroit has many significant architectural buildings, with a number of them on the National Register of Historic Places. Among the most noteworthy is the Ford Motor Company's River Rouge Complex, for a time the largest single manufacturing complex in the United States, with peak employment of about 120,000 during World War II. During the first half of the 20th century the automobile plant achieved a milestone in self-sufficiency and vertical integration, featuring a continuous work flow from iron ore and other raw materials to finished automobiles. The complex included dock facilities, blast furnaces, open-hearth steel mills, foundries, a rolling mill, metal stamping facilities, an engine plant, a glass manufacturing building, a tire plant, and its own power house supplying steam and electricity (Reference 2.5-62). Detroit also has numerous neighborhoods and historic districts that are listed on the National Register of Historic Places, including Lafayette Park which is part of the Mies van der Rohe residential district and Indian Village. Adding to this culturally rich heritage are the many history, science, and art museums located in the Detroit area. A few examples include: The Henry Ford and Motown Historical Museum (history), the New Detroit Science Center and Motor Cities National Heritage Area (science), and the Detroit Institute of Arts and Museum of Contemporary Art Detroit (art) (Reference 2.5-63).

Detroit is the largest city in the state of Michigan and the Wayne County seat. It is also a major port city on the Detroit River and Lake Erie. At its peak, Detroit was the 4th largest city in the United States, but has been declining in rank since the 1960's. Detroit, sometimes nicknamed the Motor City, is known as the world's automotive center and houses the "Big Three" automobile companies[9] (General Motors, Ford, and Chrysler). The city also became well known in the 1960s as a source of popular music, largely through the rise of Motown Records; hence, the city is also nicknamed Motown.

Detroit has four border crossings into Canada. The Ambassador Bridge and the Detroit-Windsor Tunnel provide motor vehicle thoroughfares, the Michigan Central Railway Tunnel provides railroad access and Detroit-Windsor Truck Ferry, located near the Windsor Salt Mine and Zug Island, provides water transport of heavy vehicles.

9. The automotive industry accounts directly or indirectly for 1 out of every 10 jobs in the United States. http://www.autoalliance.org/index.cfm?objectid=2EB2CCD2-1D09-317F-BB2409EF20317559

Toledo was once a part of Monroe County but following the very brief 1835 Toledo War was allocated to Ohio as part of the brokered settlement that awarded the Upper Peninsula to Michigan. Today, Toledo is known as the Glass City because of its long history of innovation in all aspects of the glass industry: windows, bottles, windshields, construction materials, and glass art, of which the Toledo Museum of Art has a large collection. Also, the first all glass building was constructed in Toledo in 1936, this was the building for the Owens-Illinois Glass Company. Toledo has also been known as the "Auto Parts Capital of the World." The Jeep vehicle has been manufactured in Toledo since 1941, and the Big Three all have factories in metropolitan Toledo.

The general decline in the nation's manufacturing sector, especially in the auto industry, has significantly impacted the employment base of Detroit and, to a lesser degree, Toledo. Both metropolitan areas have fought to revitalize their cities and to bring in new industry that would create employment opportunities. Perhaps the most visible example of this effort was the development of the Renaissance Center, located in downtown Detroit, which has helped the city become a major tourist attraction and convention city. The city hosted Super Bowl XL in 2006.

The region also benefits from a number of large and respected institutes of higher education. These include the University of Michigan and Wayne State University in Michigan, and the University of Toledo and Bowling Green State University in Ohio.

### 2.5.3 **Historic Properties**

In support of the Fermi 3 project, surveys of cultural resources (above-ground and archaeological) were conducted to identify historic resources in and near the Fermi 3 project area and to assess possible Fermi 3 impacts to these resources. Additionally, preliminary investigations were conducted along the transmission line route from the Fermi 3 project area to the Milan substation in Washtenaw County to identify previously recorded historic resources. The cultural resources investigations for the Fermi 3 project have been carried out pursuant to Section 106 of the National Historic Preservation Act (NHPA), as amended (P.L. 89-665, October 15, 1966; 16 U.S.C. 470) and its implementing regulations (36 CFR 800), which require federal agencies to take into account their activities on historic resources that may be impacted as a result of project activities. The work reported herein conforms to the requirements of the NHPA, as well as the guidance contained in NUREG-1555, and the requirements of the Michigan State Historic Preservation Office (SHPO). The members of the archaeological and above-ground resources teams meet or exceed the qualifications set out in the Secretary of the Interior's Qualification Standards. The work conducted for the project and the work products conform to the Secretary of the Interior's Standards and Guidelines and the standards established by the Michigan SHPO.

#### 2.5.3.1 **Prior Cultural Resources Surveys**

Site and Vicinity

Prior to the field survey, no formal cultural resources investigations had been conducted in the Fermi 3 area or in the vicinity. A search of records maintained at the Office of the State Archaeologist (OSA), the State of Michigan Archives, and the Monroe County Museum revealed only one report on the archaeological resources in the Fermi 3 area, i.e., a letter from the director of the University of Michigan Museum of Anthropology, documenting his visit to the site shortly after construction of Fermi 2. No excavations were undertaken during this visit and no archaeological finds were noted. The archaeological site files maintained at the OSA record four sites within a 2-mile radius of the Fermi site. These sites are summarized in Table 2.5-62. One site is located within the Fermi 3 project area, a "Native American" site of unknown age and function and described in the site files as a "lithic scatter on beach." None of the sites within the Fermi 3 area has been field verified, nor has any been assessed for National Register of Historic Places (NRHP) eligibility.

The National Archeological Data Base (NADB), maintained by the National Park Service Archeology Program, lists 72 titles of reports of archaeological resources in Monroe County; only one of which contains information about the resources within the Fermi 3 project area (NADB record 5538). This is the report of an unverified prehistoric site recorded in the Holmquist Atlas maintained at Wayne State University. The National Register Information System (NRIS) online data base contains two National Register-listed archaeological sites in Monroe County, the North Maumee Bay Archeological District and the River Raisin Battlefield Site, neither of which is within 2 miles of the Fermi 3 project area.

The files maintained at the Michigan SHPO record 22 above-ground resources within a 10 mile radius of Fermi 3 that are listed on the National Register of Historic Places or have been determined eligible for listing in the NRHP. These sites are summarized in Table 2.5-63.

Only one systematic survey has been conducted for above-ground resources within a 10 mile radius of the Fermi 3 vicinity, the 1973 Monroe County Building Survey, which exists as a collection of photographs and data cards maintained at the Monroe County Historical Museum. No accompanying report was located, and the goal of the survey is unknown, although it appears, from review of the photographs and data cards, that the primary focus of the survey was to document resources within the City of Monroe. For resources located within 10 miles of Fermi 3, the records in the 1973 survey report duplicate the information on file at the Michigan SHPO office (Reference 2.5-120).

A search of the information housed at the Monroe County Historical Museum and the Monroe County Library System's Ellis Reference and Information Center did not reveal any other previously recorded NRHP-listed or NRHP-eligible above-ground resources within a 10-mile radius of Fermi 3.

Transmission Corridors

The portion of the transmission line route from the Fermi 3 project area north to the Sumpter-Post Road junction (near Haggerty and Arkona Roads) will utilize an existing transmission line route. Therefore, the preliminary survey of historic resources was limited to the new transmission line route from the Sumpter-Post Road junction in Wayne County to the Milan substation in Washtenaw County. A search of the files at the OSA revealed 77 previously recorded archaeological sites within 1.5 miles of the proposed transmission lines from the Fermi 3 project area to the Milan substation. A summary of these sites is contained in Table 2.5-64. Fifteen reports on file at the OSA contain information regarding investigations conducted in the area of the proposed transmission line route. Of these 15 reports, six are reports of amateur surveys or collections. The remaining nine reports detail contract surveys conducted for municipal projects (e.g., wetland mitigation, proposed landfill and wastewater treatment facilities). The most recent of these surveys was conducted in 2002 on a 65-acre parcel in Wayne County. The other surveys were conducted primarily during the early 1980s and the early 1990s. All surveys conducted in the proposed transmission line route or in the near vicinity identified either prehistoric or historic archaeological sites.

Six archaeological sites are crossed by the new transmission route from the Sumpter-Post Road junction to the Milan substation. All six occur in Wayne County. Five of the sites are prehistoric and one is historic. All have been determined not eligible for listing in the NRHP.

The files maintained at the Michigan SHPO record no NRHP-listed or NRHP-eligible above-ground resources within 1.5 miles of the new transmission route from the Sumpter-Post Road junction to the Milan substation.

The only systematic survey of above-ground resources known for the transmission line area is the 1973 Monroe County Building Survey referenced above. This survey shows no resources in the vicinity of the transmission line route (Reference 2.5-120).

### 2.5.3.2 **Current Cultural Resources Survey**

Site and Vicinity

Geographically, the project area is comprised of portions of Berlin Township in the northern section of the area and Frenchtown Township in the southern section. A broad expanse of agricultural fields defines large portions of the area, particularly in those areas at some distance from the Lake Erie shore. In recent years, a number of the once open fields have become the site of newly erected houses and subdivisions. Remnants of historic communities like Oldport and Brest are evident, although the dominating presence in the area remains the beachfront resort communities. These communities have their roots in the late nineteenth century, but were greatly expanded during the first decades of the twentieth century. A description of the ecology of the site area is provided in Subsection 2.4.1 and Subsection 2.4.2.

Transmission Corridor

The transmission line route travels through Monroe, Wayne, and Washtenaw counties (Figure 2.2-3). The portion of the new transmission route from the Sumpter-Post Road junction to the Milan substation, which is the subject of the preliminary survey, is sited east-west through Wayne and Washtenaw counties. Land use along the corridor is characterized primarily by low-density residential development and heavily wooded undeveloped property. Agricultural property is prominent in the study area. Few obviously commercial properties were identified in the study area, and industrial properties were not encountered. An extensive landfill is situated at the far east end of the study area. A description of the ecology of the transmission corridor is provided in Subsection 2.4.1.9 and Subsection 2.4.2.9.

#### 2.5.3.2.1 Area of Potential Effect Delineation

The area of potential effect (APE) is defined as "…the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). In consultation with the SHPO, two APEs were delineated, one for archaeological resources and one for above-ground resources. Overall, the APE for archaeological resources is limited to construction-impacted ground within the Fermi site. To reduce the likelihood of additional archeological surveys as more detailed construction plans are developed, the APE covers a broader expanse of the Fermi site than the current construction impact areas described in Chapter 4 for non-cultural resource impacts. At the outset of the archaeological fieldwork, the archaeological APE included a series of interconnected roadway grades (60 acres), a stone quarry (48 acres), two spoil disposal zones (11 acres and 12 acres), and two previously affected Fermi site locations comprised of a 37-acre tract and a 172-acre tract. Additions to the Fermi site redesign consisted of a 53-acre "EF2 Parking Warehouse, etc" tract on the northwest margin of the site, a 24-acre construction laydown area and a 5.5-acre meteorological (MET) tower, both located at the southern margin of the site. In addition, the APE includes a tentative access road corridor from the MET tower site to Pointe Aux Peaux Road. Acreage values include areas that are based on an initial proposed site layout. The projected impact areas shown in Figure 2.5-27 encompass the current postulated APE. The current archaeological APE encompasses approximately 551 acres (Figure 2.5-27).

At the determination of the Michigan SHPO, the APE for above-ground resources was reduced from the 10-mile radius set out in NUREG-1555 to an area encompassing the Fermi site and the communities of Estral Beach, Stony Point, and Woodland Beach, with boundaries as follows:

> Beginning at the approximate intersection of Masserant Road with the Lake Erie shoreline, due southwest to the approximate intersection of Sandy Creek Road with the Lake Erie shoreline; north to North Dixie Highway; due northeast along North Dixie Highway to Port Sunlight Road; south on Port Sunlight Road to Masserant Road; east on Masserant Road to the point of beginning (Figure 2.5-28).

For the new transmission lines, the preliminary survey of APE for both archaeological resources and above-ground resources measured 1.5 miles on either side of an assumed 300 feet wide corridor centerline. The transmission line route from the Fermi 3 project area north to the Sumpter-Post Road junction will utilize an existing transmission line route. Therefore, the APE for both archaeological and above-ground resources included only the undeveloped portion of the new transmission line route from the Sumpter-Post Road junction in Wayne County to the existing Milan substation in Washtenaw County.

#### 2.5.3.2.2 Prefield Research and Field Methods

Prior to the cultural resources survey, documents housed at the SHPO, OSA, Monroe County Historical Museum, and Monroe County Library System Ellis Reference and Information Center were consulted to obtain information pertaining to historic land use and the existence of known historic sites in the Fermi 3 area and along the new transmission line route to the Milan substation.

The initial Phase I archaeological survey began in November 2007 and was completed in April 2008. Survey of the Construction laydown area and a portion of the MET tower site and tentative access road was conducted on October 20, 2009. A desk-top analysis was conducted in 2010 for those portions of the MET tower site and tentative access road corridor that were not subjected to field survey in 2009 and the new 345 kV transmission corridor. This desk-top analysis indicated that no further field surveys of these area were required. The methods employed in these studies entailed a combination of pedestrian surface inspections and shovel testing. Walk-over surface examinations were limited to areas exhibiting surface visibility of greater than 50 percent. Both surface inspection and shovel testing were carried out along 50-foot transects, with shovel tests spaced as 50-foot intervals. This approach was modified where access was hampered by saturated soils or flooding. Wet and flooded areas were commonly encountered throughout the undeveloped portions of the property; therefore, opportunistic shovel testing at drier elevations was routinely carried out. Similarly, the extensive made lands and spoil deposits comprising much of the property were avoided when they could be recognized and confirmed through field verification. Shovel test soils were screened through ¼- inch metal hardware cloth and trowel sorted. Each unit was backfilled upon the completion of field examination. Shovel test excavations were restricted to a maximum depth of 1 foot below the existing ground surface.

The above-ground resources survey began in December 2007 and was completed in April 2008. Architectural historians photographed and mapped resources within the APE that were at least 50 years old and "…possess a degree of integrity above the norm for the area…" Resources were photographed showing the façade and one other elevation in the same image. Where this was not possible, resources were photographed to obtain the view that would best allow for assessment of age and integrity. For complexes containing more than one building, such as farmsteads, streetscape views of the overall property were obtained to illustrate the buildings' relationship to each other. The location of each resource was plotted on a USGS quadrangle map, and photographic details (e.g., photograph number, date, and direction of view) were recorded on standard photography logs.

The field view for the transmission route preliminary survey took place on June 18 2008. During the field view, the transmission line route was evaluated for the existence of potentially significant above-ground resources. At that time, the transmission line study area was also visually inspected from existing roadways for evidence of obvious disturbance and the existence of landforms that are known to contain archaeological sites (e.g., sandy hummocks).

#### 2.5.3.3 **Consultation**

In preliminary SHPO consultation, the OSA noted that the project area, especially the Lake Erie shoreline, is sensitive for archaeological resources, and the area had not been systematically examined. Based on the archaeological sensitivity of the Fermi site and the lack of prior systematic surveys in the area, the OSA required an archaeological survey of the project area. The SHPO further identified a preliminary APE for above-ground resources. Subsequent consultation resulted in a modified APE and scope of work as detailed in the preceding subsection. A report has been provided to the SHPO regarding the above ground resources of the site and vicinity.

Inquiries were made with Native American tribal agencies having historical ties to the Fermi site geographic area. These consultations did not result in any concerns regarding the further development of the Fermi site.

#### 2.5.3.4 **Archaeological Site Results**

The archaeological survey resulted in the identification of seven archaeological sites (4 prehistoric, 2 historic, 1 multi-component [prehistoric/historic]) within the Fermi site and vicinity. All are located within the archaeological APE. However, only two sites are located within the Fermi 3 site, the five other sites are located outside of Detroit Edison-owned property. None of these sites is recommended eligible for listing in the NRHP.

Preliminary investigations of the transmission line route from the Sumpter-Post Road junction to the Milan substation, owned by ITC*Transmission*, indicate a moderate to high potential for encountering archaeological resources. It is unclear, however, whether any sites would be eligible for listing on the NRHP.

##### 2.5.3.4.1 **Prehistoric Sites**

Four sites represent isolated findspots consisting of chert debitage found on the surface. The context in which the artifacts were found had been compromised by continued plowing. These artifacts are indicative of the presence of prehistoric peoples in the area at some time in prehistory; however, little other data can be gathered from these sites. None of these prehistoric sites is recommended eligible for listing on the NRHP.

##### 2.5.3.4.2 **Historic Sites**

Two historic sites located within the Fermi property represent likely farmstead sites dating to the early to mid-twentieth century. One site is a historic farmstead site dating to the ca. 1930s-1960s. The site was identified by the presence of four poured concrete and concrete block foundations and one brick (house) foundation. Bottle glass and historic ceramic sherds were scattered throughout the site. A farmstead at the approximate location of the site is shown on aerial photographs of the site dating to 1949 and 1957. A 1961 aerial photograph shows the site; however, it cannot be determined from this aerial if the site contains structures or merely foundations. This late-dating farmstead is unlikely to provide information about the historic settlement and use of the area; therefore, this site is not recommended eligible for listing in the NRHP. The second site is a scatter of temporally non-diagnostic historic debris and three marked pet burials near the location of the new meteorological tower. Aerials dating to 1949, 1957 and 1961 show farmsteads along Point Aux Peaux Road in the vicinity of the site. It is likely that the site is associated with one of there farmsteads; however, this site is unlikely to provide significant information about the historic settlement of the area and it is not recommended eligible for listing in the NRHP. Detroit Edison has conducted an investigation into the archeological resources which could be impacted as a result of the construction of the Fermi 3 discharge line. There are no known archeological resources within the planned path of the discharge line. There is considered to be a moderate to high sensitivity for unidentified maritime resources. (Reference 2.5-138)

#### 2.5.3.4.3 Multi-Component Sites

One multi-component site was found during the archaeological survey. It was identified through the discovery of a single piece of chert debitage located on the surface and a scatter of historic bottle glass and ceramic sherds. Neither the prehistoric nor the historic component is likely to provide significant information about this site or the people who occupied it; therefore, this site is not recommended eligible for listing on the NRHP.

### 2.5.3.5 Above-ground Resources Results

Eighty-three above-ground sites within the above-ground APE were recorded. One four-building district and 19 individual sites are recommended as eligible for listing on the NRHP. One previously determined NRHP-eligible above-ground resource, a residence, is situated within the Fermi 3 APE, but it is not located in the Fermi 3 project area. The house was determined eligible for listing on the NRHP by the Michigan SHPO in 1995. The above-ground resources APE contains no other above-ground resources listed on or determined eligible for listing on the NRHP.

The current above-ground resources survey resulted in the identification of one four-building district and 19 individual properties that are recommended eligible for listing on the NRHP. A detailed description of these buildings has been provided to the SHPO. Although these resources are located within above-ground resources APE, none is located within the Fermi 3 site. The only resource of possible note within the Fermi site is the Enrico Fermi Atomic Power Plant, Unit 1 (Fermi 1). Fermi 1 was not evaluated as part of this cultural resources survey. An assessment is in progress to determine Fermi 1 NRHP eligibility.

### 2.5.3.6 Site National Register Eligibility

The archaeological APE contains no archaeological resources listed in or determined to be eligible for listing in the NRHP. One prehistoric archaeological site is located within the archaeological APE. This site was identified on the basis of archival material and has not been field verified, nor has it been assessed by the SHPO for NRHP eligibility. No NRHP-eligible archaeological sites have been identified as a result of the archaeological survey.

The Fermi 3 site contains no above-ground resources that are listed in the NRHP or that have been determined eligible for listing in the NRHP. The Fermi 1 site which requires demolition as part of the Fermi 3 project plan meets the NRHP eligibility requirements. Fermi 1's history has been documented in detail (Reference 2.5-139) and has been submitted to the Michigan SHPO as part of its consideration for nomination to the NRHP. If nominated, mitigation plans will be developed and implemented prior to its demolition.

## 2.5.4 Environmental Justice

The Environmental Justice analysis presented in this subsection has its impetus in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," which was issued on February 11, 1994. The order was designed to focus the attention of Federal agencies on the human health and environmental conditions in minority and low-income communities. This Executive Order has been adopted in the nuclear regulations through NRR Office Letter No. 906, Revision 2, "Procedural Guidance for Preparing Environmental Assessments and Considering Environmental Issues," September 21, 1999. Through this letter, environmental justice reviews involve identifying off-site environmental impacts, their geographic locations, minority and low-income populations that may be affected, the significance of such effects and whether they are disproportionately high and adverse compared to the population at large within the geographic area, and if so, what mitigative measures are available, and which will be implemented.

This approach is consistent with the EPA objectives concerning environmental justice which include "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (Reference 2.5-121).

### 2.5.4.1 **Methodology**

This subsection provides an indication of the minority and low-income populations within a 50 mile radius surrounding Fermi 3. The characteristics of the population within the 50 mile region were determined through the use of the LandView® 6 software (see Subsection 2.5.1 and Subsection 2.5.2 for more information on this software). The analysis evaluates data at the state, county, and Census Block Group (CBG) level.

Table 2.5-65 summarizes county and state minority and low-income population data at the CBG level. According to the table, there were a total of 4596 CBGs within the 50-mile region. The impacts on minority and low-income populations from construction and operation will be further addressed in Section 4.4 and Section 5.8, respectively.

In addition to the CBG analysis of minority and low-income populations, the environmental justice methodology involved contacting local officials and citizens likely to have knowledge of any subsistence living activities on or near the site. Such activities could include subsistence fishing, subsistence farming activities, or the culturally significant use of the acreage to be used for Fermi 3. As described below, all indications are that no subsistence activities are occurring on or near the site.

#### 2.5.4.1.1 **Minority Populations**

For purposes of making an environmental justice determination, the NRC defines a "minority" racial population as "American Indian or Alaskan Native; Asian: Native Hawaiian or Pacific Islander; or Black races, or Hispanic ethnicity." A "minority population" is defined to exist if the percentage of minorities within an environmental impact area (or CBGs) exceeds the percentage of minorities in the state in which the impact area or CBGs are located 1) by 20 percentage points or more, or 2) if the percentage of minorities in the impact area or CBGs is 50 percent or greater (Reference 2.5-122).

Using the two aforementioned guidelines and comparing the data to the state minority percentage of 21.45 in Michigan and 15.99 percent in Ohio shown in Table 2.5-66, Table 2.5-65 lists the number of minority CBGs by state and within the 50-mile region. Figure 2.5-29 depicts the minority counties in the 50-mile region, and Figure 2.5-30 depicts the minority CBGs within the 50-mile region. Only Wayne County (52.89 percent minority) qualifies as a minority regional county, and 1438 CBGs within the 50-mile region qualified as minority CBGs.

#### 2.5.4.1.2 Low-Income Populations

The U.S. Census Bureau determines the number of low-income families in a given area by comparing the actual income of a family against the low-income threshold established for the corresponding family category, which includes the variables of family size, the number of children, and the age of the householder (Reference 2.5-123). For purposes of evaluating environmental justice impacts, a low-income population is defined to exist in an area if 1) the percentage of households within an environmental impact area or CBG living below the poverty level exceeds the percentage of low-income households within the state by 20 percentage points, or 2) the percentage of low-income households in the impact area or CBG is 50 percent or greater (Reference 2.5-122).

There were no counties that qualified as low-income within the 50 mile region. As presented in Table 2.5-65 and Figure 2.5-31, there were 572 low-income CBGs within the 50 mile region.

### 2.5.4.2 Analysis

The following subsections provide the results of Environmental Justice review for the Fermi 3 region. Related construction and operational impacts are described in Subsection 4.4.3 and Subsection 5.8.3, respectively.

#### 2.5.4.2.1 Minority Populations

Of the 1438 CBGs (or 31.29 percent of the total CBGs within the region) that qualify as minority within the 50-mile region, only one CBG lies within Monroe County, meaning that 125 of 126 CBGs in the county are not of concern from a minority environmental justice perspective. The single CBG that qualifies as minority in Monroe County is located approximately 8 miles to the southwest of the Fermi site in the City of Monroe. No CBGs lying partly or wholly in Frenchtown Township are minority.

The majority of the regional CBGs classified as minority lie to the north and south of the Fermi site in Wayne County and Lucas County, respectively. There are 1,124 minority CBGs in Wayne County, most of which are in the City of Detroit, and 113 minority CBGs in Lucas County, most of which are located in Toledo.

There is only one Native American population residence within the 50-mile region. The population is located on Walpole Island, approximately 50 miles to northeast of the site. The island is inhabited by the Chippewa, Potawatomi, and Ottawa peoples; in 2001 the population was 1843. (Reference 2.5-124)

#### 2.5.4.2.2 **Low-Income Populations**

As indicated in Table 2.5-67, 10.5 percent of the Michigan population is low-income (or living in poverty), and 10.6 percent of the Ohio population is low-income. Under the adopted criteria, no counties within a 50-mile region qualify as low-income population areas, but 572 CBGs (or 12.45 percent of the CBGs shown on Table 2.5-65) qualify as low-income. Figure 2.5-31 indicates that only one CBG out of 126 within Monroe County qualifies as low-income, and this CGB lies approximately 8 miles southeast of the Fermi site. The majority of low-income CBGs lie to the north and south in Wayne County and Lucas County, respectively. Specifically, there were 428 low-income CBGs in Wayne County (most of which are located in Detroit), and 71 low-income CBGs in Lucas County (most of which are located in Toledo).

#### 2.5.4.2.3 **Migrant Labor**

Migrant labor or migrant workers are defined by the U.S. Department of Agriculture (USDA) as "a farm worker whose employment required travel that prevented the migrant worker from returning to his/her permanent place of residence the same day." (Reference 2.5-125) Table 2.5-68 lists 2002 regional statistics for farms with hired labor and for farms with hired migrant labor. In 2002, Monroe County had 35 farms with migrant labor out of 268 farms with hired labor, resulting in 13.1 percent of the farms within the county hiring migrant labor. To the north, Wayne County had 5 farms with migrant labor out of 52 farms with hired labor, equating to 9.6 percent of the farms in the county employing migrant labor. The figures for Monroe and Wayne County are close to the Michigan state average of 11.5 percent of farms employing migrant labor. To the south, Lucas County had 24 farms employing migrant labor out of 136 farms in the county with hired labor in 2002. This ratio equates to 17.7 percent of Lucas County farms employing migrant labor which is substantially above the Ohio state average of 3.1 percent.

#### 2.5.4.2.4 **Subsistence Uses**

Subsistence refers to the use of natural resources as food for consumption and for ceremonial and traditional cultural purposes, usually by low income or minority populations. Specific examples of subsistence uses include gathering plants for direct consumption (rather than produced for sale from farming operations), for use as medicine, or in ritual practices. Fishing or hunting activities associated with direct consumption (rather than for sport), associated with use in ceremonies are other examples.

Determining the presence of subsistence use can be difficult, as data at the county or CBG level is aggregated and not usually structured to identify such uses on or near the site, where any impacts arising from the construction or operation of Fermi 3 would arise. Frequently, the best means of investigating the presence of subsistence use is through dialogue with the local population who are most likely to know of such activity. This may include county officials as well as land owners in the immediate vicinity who would have knowledge of subsistence activity.

For the Fermi 3 analysis, contact was made with the Monroe County Sheriff and the Superintendent of the Monroe County Intermediate School District. In addition, two local church officials and a local land owner who has farmed more than 200 acres approximately 2 miles from the site for more than

30 years were contacted about subsistence uses. Through discussions with each of these individuals, no populations involved in subsistence use activities (as described above) were identified on or near the site. This is consistent with the controlled access to the Fermi site, and the use of the adjacent land either for farmland or for residences.

### 2.5.5 **Noise**

This section provides a description of the existing acoustical environment around the Fermi site. The existing acoustical environment was determined by an ambient sound level survey conducted on November 26-28, 2007, with Fermi 2 in operation. The survey was conducted in accordance with applicable standards, including ANSI S12.9 (Reference 2.5-128), ANSI S12.18 (Reference 2.5-129), and ANSI S1.13 (Reference 2.5-130). In order to effectively quantify and qualify the existing daily sound levels, the ambient survey included both continuous monitoring and short-term measurements. This section provides information regarding the existing acoustical environment for subsequent discussion in Chapter 3, Chapter 4, and Chapter 5.

A description of the Fermi site and vicinity is included in Subsection 2.2.1. Figure 2.5-32 shows the Fermi site and the seven noise monitoring locations (NMLs) identified during the survey. The NMLs were chosen based on the location of the nearest noise-sensitive receptors (i.e., the nearest residences) within 5 miles of the Fermi site.

The weather conditions during the survey were generally conducive to the measurement of sound levels. The temperature range was between 18 and 39°F and relative humidity range was between 45 and 100 percent. (With regards to relative humidity, even at times when the air was saturated there was no precipitation during the survey.) Skies were generally overcast and winds were generally calm, with the exception of a brief period of relatively high average wind speed between 10:00 a.m. and 3:00 p.m. on November 27, 2007 (discussed in more detail below). Since the survey was conducted during the late fall, many of the surrounding deciduous trees had shed their leaves.

The noises observed during the survey were typical for suburban areas and are summarized in Table 2.5-69. Observed noise sources generally included distant and local traffic noise, birds, dogs barking, some intermittent gunshot noise from the Fermi firing range, and the Fermi cooling towers. The Fermi cooling towers were faintly audible at five of the seven NMLs during the survey, as shown in Table 2.5-69.

Continuous noise monitoring was conducted at NMLs 1-3 for 24 hours between 3:00 a.m. on November 27 through 3:00 a.m. on November 28, 2008, to capture typical ambient daytime and nighttime sound level trends. In addition to the continuous monitoring, manned, short-term noise measurements were conducted at NMLs 1-7. These short-term measurements helped to qualify the surrounding noise sources and to provide an indication of the spectral content of the existing acoustical environment. The measurement period was 10 minutes in length in order to capture sound levels representative of each location during different time periods throughout the day.

Measurements at each NML included $L_{90}$ and $L_{eq}$ sound level metrics. The $L_{90}$ is the 90-percentile exceeded sound level; i.e., the sound level that was exceeded for 90 percent of the measurement period. The $L_{90}$ is referred to as the residual sound level; it provides a measure of the background sound level without the influence of loud, transient noise sources (Reference 2.5-128). The $L_{dn}$ is the day-night average sound level over a 24-hour period and is derived using the hourly equivalent continuous sound levels ($L_{eq,1h}$) measured over a 24-hour period. The derivation of $L_{dn}$ includes applying a 10 dB penalty to the nine nighttime hours between 10:00 p.m. and 7:00 a.m. (Reference 2.5-131). Figure 2.5-33 shows the hourly $L_{eq}$ sound levels at NMLs 1-3 for the 24-hour measurement period, along with the associated $L_{dn}$ for each receptor. Figure 2.5-34 shows the hourly $L_{90}$ sound levels at NMLs 1-3 for the 24-hour measurement period. In general, the highest sound levels were experienced during the late morning / early afternoon hours between 10 a.m. and 2 p.m., which is typical for suburban areas due to, e.g., increases in highway and local traffic flow. The lowest sound levels were experienced during the late night / early morning hours between approximately 11:00 p.m. and 3:00 a.m., when noise in suburban areas from major sources (such as highways) reaches a minimum. There was also a period of high average wind speed between 10 a.m. and 3 p.m. on November 27, 2007, which contributed to the sound levels shown in Figure 2.5-33 and Figure 2.5-34.

Section 5.3.4 of NUREG-1555 states that “(n)oise levels are acceptable if the day-night average sound level outside a residence is less than 65 decibels.” This requirement is consistent with U.S. Department of Housing and Urban Development (HUD) guidelines in 24 CFR 51.101(8), *Exterior noise goals,* for outdoor sound levels (Reference 2.5-132). There are no state or county noise regulations for Michigan or Monroe County, respectively. The Frenchtown Township Charter Township Zoning Ordinance provides noise regulations for uses established in Commercial and Manufacturing Districts (Reference 2.5-133). However, as stated in Section 2.2, the Fermi site is located within a Public Service District. Therefore, the Frenchtown Township noise regulations are not applicable to the Fermi site. Nonetheless, the Frenchtown Township noise regulations for Manufacturing uses are consistent with both the NUREG-1555 and HUD guidelines for outdoor sound levels (i.e., $L_{dn} \leq 65$ dBA).

Table 2.5-69 provides the location of each NML; the lowest $L_{90}$ sound level measured during the survey for each location; the $L_{dn}$ sound level measured over the 24-hour survey period for NML-1, NML-2, and NML-3; and the noise sources that were generally observed during the survey at each NML. All seven NMLs represent the nearest noise-sensitive receptors (i.e., the nearest residences) to the Fermi facility. The approximate distance from each NML to Fermi 2 equipment is provided in Table 2.5-69. The NML-6 sound level can be considered to be representative of the nighttime background sound level typically experienced by residences nearest to the existing transmission lines leading away from the Fermi site and includes noise contributions from the existing transmission lines.

It should be noted that a period of high average wind speed was observed between approximately 10 a.m. and 3 p.m. on November 27, 2007. The average wind speed during this period was high enough to have affected sound level measurements, which will have affected the measured $L_{dn}$ sound level, particularly at NML-1 and NML-2. It is estimated that the $L_{dn}$ sound level for a 24-hour period with lower winds during the 10 a.m. to the 3 p.m. period could be approximately 3-7 dB lower than the $L_{dn}$ sound level indicated for NML-1 and NML-2 in Table 2.5-69 and Figure 2.5-33.

Nonetheless, even including the period of higher average wind speed, the measured existing $L_{dn}$ sound levels for NML-1, NML-2, and NML-3 are below 65 dBA.

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## Table 2.5-1 U.S. and Canadian Counties within a 50-Mile Radius of Fermi 3

| Michigan Counties | Ohio Counties | Ontario CA Counties |
|---|---|---|
| Jackson | Erie | Essex |
| Lenawee | Fulton | Chatham-Kent |
| Livingston | Henry | Lambton |
| Macomb | Lucas | |
| Monroe* | Ottawa | |
| Oakland | Sandusky | |
| Washtenaw | Seneca | |
| Wayne | Wood | |

* Location of Fermi 3

## Table 2.5-2 Resident Population Distribution by Segment, 1 to 10 Miles from the Fermi Site (2000)

| Cardinal Compass Direction | Mile Range | | | | | |
|---|---|---|---|---|---|---|
| | 0-1[1] | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 |
| NORTH | 121 | 83 | 397 | 218 | 188 | 12,715 |
| N-NE | | 124 | 46 | 26 | 71 | 7,212 |
| NE | | 282 | 204 | 0 | 0 | 0 |
| E-NE | | 0 | 0 | 0 | 0 | 0 |
| EAST | | 0 | 0 | 0 | 0 | 0 |
| E-SE | | 0 | 0 | 0 | 0 | 0 |
| SE | | 0 | 0 | 0 | 0 | 0 |
| S-SE | | 0 | 0 | 0 | 0 | 0 |
| SOUTH | | 1,154 | 0 | 0 | 0 | 0 |
| S-SW | | 259 | 0 | 0 | 0 | 0 |
| SW | | 280 | 0 | 106 | 162 | 1,609 |
| W-SW | | 115 | 1,279 | 2,426 | 1,341 | 35,180 |
| WEST | | 185 | 213 | 219 | 518 | 4,863 |
| W-NW | | 28 | 0 | 70 | 263 | 5,066 |
| NW | | 195 | 392 | 203 | 776 | 5,521 |
| N-NW | | 205 | 199 | 240 | 191 | 4,253 |
| Total Population Per Segment | 121 | 2,910 | 2,730 | 3,508 | 3,510 | 76,419 |
| Total Population: All Segments | 89,198 | | | | | |

Note:
1. Per NUREG-1555, Figure 2.5-1, Census Block Points were summed within the 1-mile radius, rather than divided into directional segments.

## Table 2.5-3 Largest Population Areas within 10 Miles of the Fermi Site (2000)

| Populated Place | Population | Distance from Fermi 3 (Mi) |
|---|---|---|
| Stony Point | 1,775 | 1.3 |
| Woodland Beach | 2,179 | 2.9 |
| Detroit Beach | 2,289 | 4.0 |
| Monroe | 32,339 | 5.5 |
| Rockwood | 4,726 | 7.6 |
| Carleton | 2,562 | 9.4 |
| Flat Rock | 8,488 | 9.5 |
| Gibraltar | 4,264 | 9.5 |

## Table 2.5-4 Resident Population Distribution by Segment, 0 to 50 Miles from the Fermi Site (2000)

| Cardinal Compass Direction | Mile Range | | | | |
|---|---|---|---|---|---|
| | 0-10[1] | 10-20 | 20-30 | 30-40 | 40-50 |
| NORTH | 89,198 | 121,416 | 453,510 | 571,939 | 365,114 |
| N-NE | | 107,027 | 354,880 | 725,303 | 453,907 |
| NE | | 15,533 | 123,981 | 36,136 | 5,371 |
| E-NE | | 10,242 | 17,807 | 22,751 | 19,742 |
| EAST | | 2,220 | 4,917 | 11,590 | 2,351 |
| E-SE | | - | - | 256 | - |
| SE | | - | 67 | 8,110 | 43,157 |
| S-SE | | - | 1,540 | 17,199 | 28,286 |
| SOUTH | | - | 7,621 | 14,145 | 27,723 |
| S-SW | | 3,547 | 112,020 | 36,023 | 40,991 |
| SW | | 12,453 | 265,684 | 111,951 | 28,032 |
| W-SW | | 8,945 | 10,475 | 10,573 | 8,240 |
| WEST | | 6,730 | 8,705 | 37,023 | 30,762 |
| W-NW | | 5,732 | 20,446 | 19,167 | 16,759 |
| NW | | 17,938 | 122,093 | 138,391 | 67,173 |
| N-NW | | 24,388 | 221,758 | 179,240 | 149,989 |
| Total Population Per Segment | 89,198 | 336,170 | 1,725,503 | 1,939,797 | 1,287,597 |
| Total Population: All Segments | 5,378,266 | | | | |

Note:
1. Per NUREG-1555, Figure 2.5-2, Census Block Points were summed within the 1-mile radius, rather than divided into directional segments.

## Table 2.5-5 Resident and Transient Population and Density by 0 to 10-Mile Concentric Circles from Fermi 3 (2000)

| | Population | | | Area | Population Density |
|---|---|---|---|---|---|
| Concentric Circle | Resident | Transient | Total | (Sq Mi) | (Persons/Sq Mi) |
| 0 – 1 Mile | 121 | 449 | 570 | 3.1 | 181 |
| 1 – 2 Mile | 2,910 | 14 | 2,924 | 9.4 | 310 |
| 2 – 3 Mile | 2,730 | 30 | 2,760 | 15.7 | 176 |
| 3 – 4 Mile | 3,508 | 226 | 3,734 | 22.0 | 170 |
| 4 – 5 Mile | 3,510 | 2,153 | 5,663 | 28.3 | 200 |
| 5 - 10 Mile | 76,419 | 14,666 | 91,085 | 235.6 | 387 |
| 0 - 10 Mile | 89,198 | 17,538 | 106,736 | 314.2 | 340 |
| Michigan overall | | | 9,938,444 | 56,804 | 175 |

Note:
Column totals may not equal the sum of the components due to rounding

## Table 2.5-6 Resident and Transient Population and Density by 0 to 50-Mile Concentric Circles from Fermi 3 (2000)

| | Population | | | Area | Population Density |
|---|---|---|---|---|---|
| Concentric Circle | Resident | Transient | Total | (Sq Mi) | (Persons/Sq Mi) |
| 0 - 10 Mile | 89,198 | 17,538 | 106,736 | 314 | 340 |
| 10 - 20 Mile | 336,170 | 10,906 | 347,076 | 942 | 368 |
| 20 - 30 Mile | 1,725,503 | 44,433 | 1,769,936 | 1,571 | 1127 |
| 30 - 40 Mile | 1,939,797 | 70,601 | 2,010,398 | 2,199 | 914 |
| 40 - 50 Mile | 1,287,597 | 57,178 | 1,344,775 | 2,827 | 476 |
| 0 - 50 Mile | 5,378,266 | 200,656 | 5,578,922 | 7,854 | 710 |
| Michigan overall | | | 9,938,444 | 56,804 | 175 |
| Ohio overall | | | 11,353,140 | 40,948 | 277 |

Note:
Column totals may not equal the sum of the components due to rounding

## Table 2.5-7 Commuter Information for the Fermi 3 Region (2000)

| County | Inflow | Outflow | Net flow |
|---|---|---|---|
| Jackson Co, MI | 9,899 | 16,929 | -7,030 |
| Lenawee Co, MI | 6,160 | 14,759 | -8,599 |
| Livingston Co, MI | 20,093 | 45,884 | -25,791 |
| Macomb Co, MI | 116,045 | 158,944 | -42,899 |
| Monroe Co, MI | 12,886 | 33,633 | -20,747 |
| Oakland Co, MI | 287,517 | 174,731 | 112,786 |
| St, Clair Co, MI | 8,203 | 28,113 | -19,910 |
| Washtenaw Co, MI | 69,192 | 39,361 | 29,831 |
| Wayne Co, MI | 226,899 | 208,906 | 17,993 |
| Erie Co, OH | 9,680 | 9,366 | 314 |
| Fulton Co, OH | 8,676 | 8,124 | 552 |
| Henry Co, OH | 3,151 | 5,977 | -2,826 |
| Lucas Co, OH | 49,919 | 32,211 | 17,708 |
| Ottawa Co, OH | 4,175 | 8,510 | -4,335 |
| Sandusky Co, OH | 7,452 | 9,335 | -1,883 |
| Seneca Co, OH | 5,388 | 10,504 | -5,116 |
| Wood Co, OH | 26,509 | 27,099 | -590 |
| Totals | 871,844 | 832,386 | 39,458 |

## Table 2.5-8 Special Facilities Transient Population Data for the Regional Counties (2000)

| County | Number of People Living in: | | | | | |
|---|---|---|---|---|---|---|
| | State Prisons/ Local Jails[1] | College Dormitories[2] | Nursing Homes | Hospitals or Wards[3] | Religious Group Quarters[4] | Other non-house hold living situations[5] |
| Jackson Co, MI | 7,327 | 761 | 1,139 | 153 | 253 | 405 |
| Lenawee Co, MI | 2,597 | 1,005 | 543 | 299 | 602 | 131 |
| Livingston Co, MI | 423 | 3 | 212 | 119 | 330 | 178 |
| Macomb Co, MI | 2,513 | | 3,935 | 502 | 167 | 1,177 |
| Monroe Co, MI | 300 | | 507 | 73 | 301 | 329 |
| Oakland Co, MI | 2,571 | 1,837 | 4,327 | 1,753 | 1,483 | 1,773 |
| St. Clair Co, MI | 274 | | 605 | 152 | 448 | 174 |
| Washtenaw Co, MI | 3,318 | 14,898 | 1,244 | 1,194 | 222 | 453 |
| Wayne Co, MI | 7,783 | 1,254 | 10,061 | 4,661 | 1,493 | 6,726 |
| Erie Co, OH | 108 | | 1,443 | 37 | 223 | 175 |
| Fulton Co, OH | 5 | | 372 | 17 | 27 | 13 |
| Henry Co, OH | 180 | | 294 | 31 | | 74 |
| Lucas Co, OH | 591 | 2,505 | 3,663 | 628 | 414 | 871 |
| Ottawa Co, OH | 72 | | 382 | 137 | 32 | 2 |
| Sandusky Co, OH | 99 | | 621 | 101 | 69 | 105 |
| Seneca Co, OH | 8 | 751 | 369 | 195 | 311 | 19 |
| Wood Co, OH | 232 | 6,377 | 777 | 87 | 88 | 144 |
| Total: | 28,401 | 29,391 | 30,494 | 10,139 | 6,463 | 12,749 |

Notes:
1. Includes local jails (including police lockups), halfway houses, state prisons, juvenile institutions (including short-term care, detention or diagnostic centers), other correctional institutions, federal prisons, and military disciplinary barracks
2. Includes college quarters off campus
3. Includes homes for the mentally/physically handicapped/ill, hospitals/wards and hospices for chronically ill, orthopedic wards, institutions for the deaf or blind, patients who have no usual home elsewhere
4. Includes workers' dormitories, agriculture workers' dormitories on farms, other group homes
5. Includes other noninstitutional group quarters, job corps and vocational training facilities

Source: Reference 2.5-5

## Table 2.5-9 United States Population and Average Annual Growth Rates

| | Historical and Estimated Population | | | Average Annual Growth Rate | | |
|---|---|---|---|---|---|---|
| **U.S. Division** | **1990** | **2000** | **1-Jul-05** | '90-'00 | 00-'05 | '90-'05 |
| Michigan | 9,295,297 | 9,938,444 | 10,100,833 | 0.67% | 0.32% | 0.56% |
| Jackson Co, MI | 149,756 | 158,422 | 163,432 | 0.56% | 0.62% | 0.58% |
| Lenawee Co, MI | 91,476 | 98,890 | 101,778 | 0.78% | 0.58% | 0.71% |
| Livingston Co, MI | 115,645 | 156,951 | 181,404 | 3.10% | 2.94% | 3.05% |
| Macomb Co, MI | 717,400 | 788,149 | 828,950 | 0.94% | 1.01% | 0.97% |
| Monroe Co, MI | 133,600 | 145,945 | 153,772 | 0.89% | 1.05% | 0.94% |
| Oakland Co, MI | 1,083,592 | 1,194,156 | 1,213,669 | 0.98% | 0.32% | 0.76% |
| St. Clair Co, MI | 145,607 | 164,235 | 171,079 | 1.21% | 0.82% | 1.08% |
| Washtenaw Co, MI | 282,937 | 322,895 | 342,124 | 1.33% | 1.16% | 1.27% |
| Wayne Co, MI | 2,111,687 | 2,061,162 | 1,990,932 | -0.24% | -0.69% | -0.39% |
| Ohio | 10,847,115 | 11,353,140 | 11,470,685 | 0.46% | 0.21% | 0.37% |
| Erie Co, OH | 76,779 | 79,551 | 78,374 | 0.36% | -0.30% | 0.14% |
| Fulton Co, OH | 38,498 | 42,084 | 42,888 | 0.89% | 0.38% | 0.72% |
| Henry Co, OH | 29,108 | 29,210 | 29,431 | 0.03% | 0.15% | 0.07% |
| Lucas Co, OH | 462,361 | 455,054 | 447,410 | -0.16% | -0.34% | -0.22% |
| Ottawa Co, OH | 40,029 | 40,985 | 41,430 | 0.24% | 0.22% | 0.23% |
| Sandusky Co, OH | 61,963 | 61,792 | 61,279 | -0.03% | -0.17% | -0.07% |
| Seneca Co, OH | 59,733 | 58,683 | 57,373 | -0.18% | -0.45% | -0.27% |
| Wood Co, OH | 113,269 | 121,065 | 123,889 | 0.67% | 0.46% | 0.60% |
| All Regional Counties | 5,713,440 | 5,979,229 | 6,029,214 | 0.46% | 0.17% | 0.36% |

## Table 2.5-10 1 to 10 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 1 of 5)

| | | Population in Mile Range | | | | | |
|---|---|---|---|---|---|---|---|
| | **Year** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **Total** |
| | Year | Population in the 0-1 Mile Range | | | | | |
| | 2000 | 570 | | | | | |
| | 2008 | 1163 | | | | | |
| | 2020 | 1153 | | | | | |
| | 2030 | 1144 | | | | | |
| | 2040 | 1133 | | | | | |
| | 2050 | 1122 | | | | | |
| | 2060 | 1109 | | | | | |
| North | 2000 | 83 | 397 | 218 | 188 | 14,146 | 15,032 |
| | 2008 | 89 | 427 | 234 | 202 | 14,505 | 15,457 |
| | 2020 | 100 | 478 | 262 | 226 | 15,061 | 16,127 |
| | 2030 | 109 | 525 | 288 | 249 | 15,541 | 16,712 |
| | 2040 | 120 | 577 | 317 | 273 | 16,036 | 17,323 |
| | 2050 | 132 | 634 | 348 | 300 | 16,547 | 17,961 |
| | 2060 | 145 | 696 | 382 | 329 | 17,074 | 18,626 |
| N-NE | 2000 | 124 | 46 | 26 | 2,071 | 9,912 | 12,179 |
| | 2008 | 133 | 49 | 28 | 2,232 | 9,834 | 12,276 |
| | 2020 | 149 | 55 | 31 | 2,498 | 9,718 | 12,451 |
| | 2030 | 164 | 60 | 34 | 2,743 | 9,623 | 12,624 |
| | 2040 | 180 | 66 | 37 | 3,013 | 9,529 | 12,825 |
| | 2050 | 198 | 73 | 41 | 3,309 | 9,436 | 13,057 |
| | 2060 | 217 | 80 | 45 | 3,634 | 9,343 | 13,319 |

**Table 2.5-10 1 to 10 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 2 of 5)**

| | | Population in Mile Range | | | | | |
|---|---|---|---|---|---|---|---|
| | Year | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | Total |
| NE | 2000 | 282 | 204 | 0 | 0 | 0 | 486 |
| | 2008 | 303 | 219 | 0 | 0 | 0 | 522 |
| | 2020 | 340 | 246 | 0 | 0 | 0 | 586 |
| | 2030 | 373 | 270 | 0 | 0 | 0 | 643 |
| | 2040 | 410 | 296 | 0 | 0 | 0 | 706 |
| | 2050 | 450 | 325 | 0 | 0 | 0 | 775 |
| | 2060 | 494 | 358 | 0 | 0 | 0 | 852 |
| E-NE | 2000 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2008 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2030 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2060 | 0 | 0 | 0 | 0 | 0 | 0 |
| East | 2000 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2008 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2030 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2060 | 0 | 0 | 0 | 0 | 0 | 0 |
| E-SE | 2000 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2008 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2030 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2060 | 0 | 0 | 0 | 0 | 0 | 0 |

## Table 2.5-10 1 to 10 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 3 of 5)

| | | Population in Mile Range | | | | | |
|---|---|---|---|---|---|---|---|
| | Year | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | Total |
| SE | 2000 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2008 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2030 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2060 | 0 | 0 | 0 | 0 | 0 | 0 |
| S-SE | 2000 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2008 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2030 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2060 | 0 | 0 | 0 | 0 | 0 | 0 |
| South | 2000 | 1,154 | 0 | 0 | 0 | 0 | 1,154 |
| | 2008 | 1,243 | 0 | 0 | 0 | 0 | 1,243 |
| | 2020 | 1,391 | 0 | 0 | 0 | 0 | 1,391 |
| | 2030 | 1,528 | 0 | 0 | 0 | 0 | 1,528 |
| | 2040 | 1,679 | 0 | 0 | 0 | 0 | 1,679 |
| | 2050 | 1,844 | 0 | 0 | 0 | 0 | 1,844 |
| | 2060 | 2,025 | 0 | 0 | 0 | 0 | 2,025 |
| S-SW | 2000 | 259 | 0 | 0 | 0 | 0 | 259 |
| | 2008 | 279 | 0 | 0 | 0 | 0 | 279 |
| | 2020 | 312 | 0 | 0 | 0 | 0 | 312 |
| | 2030 | 343 | 0 | 0 | 0 | 0 | 343 |
| | 2040 | 376 | 0 | 0 | 0 | 0 | 376 |
| | 2050 | 413 | 0 | 0 | 0 | 0 | 413 |
| | 2060 | 454 | 0 | 0 | 0 | 0 | 454 |

**Table 2.5-10 1 to 10 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 4 of 5)**

| | | Population in Mile Range | | | | | |
|---|---|---|---|---|---|---|---|
| | Year | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | Total |
| SW | 2000 | 280 | 0 | 106 | 162 | 8,526 | 9,074 |
| | 2008 | 301 | 0 | 114 | 174 | 9,190 | 9,779 |
| | 2020 | 337 | 0 | 127 | 195 | 10,284 | 10,943 |
| | 2030 | 370 | 0 | 140 | 214 | 11,295 | 12,019 |
| | 2040 | 407 | 0 | 154 | 235 | 12,405 | 13,201 |
| | 2050 | 447 | 0 | 169 | 258 | 13,624 | 14,498 |
| | 2060 | 491 | 0 | 186 | 284 | 14,963 | 15,924 |
| W-SW | 2000 | 115 | 1,309 | 2,426 | 1,458 | 38,357 | 43,665 |
| | 2008 | 123 | 1,410 | 2,614 | 1,571 | 41,344 | 47,062 |
| | 2020 | 138 | 1,578 | 2,926 | 1,758 | 46,267 | 52,667 |
| | 2030 | 152 | 1,734 | 3,213 | 1,931 | 50,814 | 57,844 |
| | 2040 | 167 | 1,904 | 3,529 | 2,121 | 55,808 | 63,529 |
| | 2050 | 183 | 2,091 | 3,876 | 2,329 | 61,293 | 69,772 |
| | 2060 | 201 | 2,297 | 4,257 | 2,558 | 67,317 | 76,630 |
| West | 2000 | 185 | 213 | 219 | 554 | 5,003 | 6,174 |
| | 2008 | 199 | 229 | 236 | 597 | 5,392 | 6,653 |
| | 2020 | 223 | 256 | 264 | 668 | 6,034 | 7,445 |
| | 2030 | 245 | 282 | 290 | 733 | 6,627 | 8,177 |
| | 2040 | 269 | 309 | 318 | 806 | 7,279 | 8,981 |
| | 2050 | 295 | 340 | 349 | 885 | 7,994 | 9,863 |
| | 2060 | 324 | 373 | 384 | 972 | 8,780 | 10,833 |
| W-NW | 2000 | 28 | 0 | 70 | 263 | 5,066 | 5,427 |
| | 2008 | 30 | 0 | 75 | 283 | 5,460 | 5,848 |
| | 2020 | 33 | 0 | 84 | 317 | 6,110 | 6,544 |
| | 2030 | 37 | 0 | 92 | 348 | 6,711 | 7,188 |
| | 2040 | 40 | 0 | 101 | 382 | 7,370 | 7,893 |
| | 2050 | 44 | 0 | 111 | 420 | 8,095 | 8,670 |
| | 2060 | 49 | 0 | 122 | 461 | 8,890 | 9,522 |

## Table 2.5-10 1 to 10 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 5 of 5)

| | | Population in Mile Range | | | | | |
|---|---|---|---|---|---|---|---|
| | Year | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | Total |
| NW | 2000 | 195 | 392 | 379 | 776 | 5,802 | 7,544 |
| | 2008 | 210 | 422 | 408 | 836 | 6,253 | 8,129 |
| | 2020 | 235 | 472 | 457 | 936 | 6,998 | 9,098 |
| | 2030 | 258 | 519 | 502 | 1,028 | 7,686 | 9,993 |
| | 2040 | 283 | 570 | 551 | 1,129 | 8,441 | 10,974 |
| | 2050 | 311 | 626 | 605 | 1,240 | 9,271 | 12,053 |
| | 2060 | 342 | 687 | 665 | 1,361 | 10,182 | 13,237 |
| N-NW | 2000 | 219 | 199 | 290 | 191 | 4,273 | 5,172 |
| | 2008 | 236 | 214 | 312 | 205 | 4,450 | 5,417 |
| | 2020 | 264 | 240 | 349 | 230 | 4,731 | 5,814 |
| | 2030 | 290 | 263 | 384 | 253 | 4,978 | 6,168 |
| | 2040 | 318 | 289 | 421 | 277 | 5,239 | 6,544 |
| | 2050 | 349 | 317 | 463 | 305 | 5,513 | 6,947 |
| | 2060 | 384 | 349 | 508 | 335 | 5,801 | 7,377 |

## Table 2.5-11 Canadian Population and Average Annual Growth Rates

| | Historical Population | | | Average Annual Growth Rate | | |
|---|---|---|---|---|---|---|
| **Canadian Subdivision** | **1996** | **2001** | **2006** | **'96-'01** | **'01-'06** | **'96-'06** |
| Ontario | 10,753,573 | 11,410,046 | 12,160,282 | 1.19% | 1.28% | 1.24% |
| Amherstburg | 19,273 | 20,339 | 21,748 | 1.08% | 1.35% | 1.22% |
| Chatham-Kent | 109,350 | 107,341 | 108,177 | -0.37% | 0.16% | -0.11% |
| Essex | 19,437 | 20,085 | 20,032 | 0.66% | -0.05% | 0.30% |
| Kingsville | 18,409 | 19,619 | 20,908 | 1.28% | 1.28% | 1.28% |
| Lakeshore | 26,127 | 28,746 | 33,245 | 1.93% | 2.95% | 2.44% |
| LaSalle | 20,556 | 25,285 | 27,652 | 4.23% | 1.81% | 3.01% |
| Leamington | 25,389 | 27,138 | 28,833 | 1.34% | 1.22% | 1.28% |
| Pelee | 283 | 256 | 287 | -1.99% | 2.31% | 0.14% |
| Tecumseh | 23,151 | 25,105 | 24,224 | 1.63% | -0.71% | 0.45% |
| Walpole Island 46 | 1,525 | 1,843 | 1,878 | 3.86% | 0.38% | 2.10% |
| Windsor | 197,694 | 208,402 | 216,473 | 1.06% | 0.76% | 0.91% |
| **All Subdivisions** | 461,194 | 484,159 | 503,457 | 0.98% | 0.78% | 0.88% |

## Table 2.5-12 10 to 50 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 1 of 4)

| Cardinal Compass Direction | Year | Mile Range 10-20 | 20-30 | 30-40 | 40-50 | Total |
|---|---|---|---|---|---|---|
| North | 2000 | 126,286 | 461,805 | 589,430 | 391,250 | 1,568,771 |
| | 2008 | 122,381 | 447,527 | 608,376 | 415,635 | 1,593,919 |
| | 2020 | 116,750 | 426,934 | 637,944 | 455,093 | 1,636,721 |
| | 2030 | 112,255 | 410,499 | 663,679 | 490,821 | 1,677,254 |
| | 2040 | 107,934 | 394,696 | 690,452 | 529,354 | 1,722,436 |
| | 2050 | 103,779 | 379,502 | 718,305 | 570,912 | 1,772,498 |
| | 2060 | 99,784 | 364,893 | 747,281 | 615,732 | 1,827,690 |
| N-NE | 2000 | 110,927 | 363,265 | 731,939 | 446,579 | 1,652,710 |
| | 2008 | 112,409 | 372,223 | 739,588 | 481,669 | 1,705,889 |
| | 2020 | 114,670 | 386,077 | 751,213 | 539,541 | 1,791,501 |
| | 2030 | 116,589 | 398,015 | 761,040 | 593,044 | 1,868,688 |
| | 2040 | 118,540 | 410,323 | 770,996 | 651,854 | 1,951,713 |
| | 2050 | 120,523 | 423,010 | 781,081 | 716,495 | 2,041,109 |
| | 2060 | 122,540 | 436,091 | 791,299 | 787,547 | 2,137,477 |
| NE | 2000 | 16,227 | 128,415 | 37,448 | 5,553 | 187,643 |
| | 2008 | 17,859 | 140,785 | 44,592 | 6,614 | 209,850 |
| | 2020 | 20,620 | 161,611 | 57,944 | 8,598 | 248,773 |
| | 2030 | 23,245 | 181,300 | 72,077 | 10,699 | 287,321 |
| | 2040 | 26,204 | 203,388 | 89,658 | 13,312 | 332,562 |
| | 2050 | 29,539 | 228,167 | 111,527 | 16,565 | 385,798 |
| | 2060 | 33,299 | 255,965 | 138,730 | 20,612 | 448,606 |
| E-NE | 2000 | 10,608 | 18,443 | 23,564 | 20,448 | 73,063 |
| | 2008 | 11,176 | 19,782 | 27,221 | 22,628 | 80,807 |
| | 2020 | 12,088 | 21,976 | 33,798 | 26,343 | 94,205 |
| | 2030 | 12,904 | 23,989 | 40,477 | 29,901 | 107,271 |
| | 2040 | 13,775 | 26,187 | 48,476 | 33,939 | 122,377 |
| | 2050 | 14,705 | 28,586 | 58,056 | 38,523 | 139,870 |
| | 2060 | 15,698 | 31,204 | 69,529 | 43,725 | 160,156 |

## Table 2.5-12 10 to 50 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 2 of 4)

| Cardinal Compass Direction | Year | Mile Range 10-20 | 20-30 | 30-40 | 40-50 | Total |
|---|---|---|---|---|---|---|
| East | 2000 | 2,299 | 5,092 | 12,004 | 2,435 | 21,830 |
| | 2008 | 2,354 | 5,485 | 13,290 | 2,592 | 23,721 |
| | 2020 | 2,441 | 6,134 | 15,482 | 2,847 | 26,904 |
| | 2030 | 2,516 | 6,734 | 17,582 | 3,078 | 29,910 |
| | 2040 | 2,593 | 7,392 | 19,967 | 3,329 | 33,281 |
| | 2050 | 2,672 | 8,114 | 22,676 | 3,599 | 37,061 |
| | 2060 | 2,754 | 8,907 | 25,753 | 3,892 | 41,306 |
| E-SE | 2000 | 0 | 0 | 265 | 0 | 265 |
| | 2008 | 0 | 0 | 267 | 0 | 267 |
| | 2020 | 0 | 0 | 272 | 0 | 272 |
| | 2030 | 0 | 0 | 276 | 0 | 276 |
| | 2040 | 0 | 0 | 280 | 0 | 280 |
| | 2050 | 0 | 0 | 284 | 0 | 284 |
| | 2060 | 0 | 0 | 288 | 0 | 288 |
| SE | 2000 | 0 | 100 | 9,884 | 43,966 | 53,950 |
| | 2008 | 0 | 101 | 10,055 | 44,528 | 54,684 |
| | 2020 | 0 | 104 | 10,317 | 45,386 | 55,807 |
| | 2030 | 0 | 107 | 10,542 | 46,113 | 56,762 |
| | 2040 | 0 | 109 | 10,770 | 46,852 | 57,731 |
| | 2050 | 0 | 112 | 11,004 | 47,602 | 58,718 |
| | 2060 | 0 | 114 | 11,243 | 48,365 | 59,722 |
| S-SE | 2000 | 0 | 1,467 | 16,677 | 28,597 | 46,741 |
| | 2008 | 0 | 1,494 | 16,883 | 28,585 | 46,962 |
| | 2020 | 0 | 1,535 | 17,197 | 28,568 | 47,300 |
| | 2030 | 0 | 1,571 | 17,463 | 28,553 | 47,587 |
| | 2040 | 0 | 1,607 | 17,733 | 28,539 | 47,879 |
| | 2050 | 0 | 1,645 | 18,007 | 28,524 | 48,176 |
| | 2060 | 0 | 1,683 | 18,286 | 28,510 | 48,479 |

## Table 2.5-12 10 to 50 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 3 of 4)

| Cardinal Compass Direction | Year | Mile Range 10-20 | 20-30 | 30-40 | 40-50 | Total |
|---|---|---|---|---|---|---|
| South | 2000 | 166 | 8,116 | 13,136 | 27,293 | 48,711 |
| | 2008 | 163 | 8,202 | 13,193 | 27,091 | 48,649 |
| | 2020 | 158 | 8,333 | 13,279 | 26,793 | 48,563 |
| | 2030 | 155 | 8,444 | 13,351 | 26,546 | 48,496 |
| | 2040 | 152 | 8,556 | 13,424 | 26,302 | 48,434 |
| | 2050 | 148 | 8,670 | 13,497 | 26,060 | 48,375 |
| | 2060 | 145 | 8,785 | 13,570 | 25,820 | 48,320 |
| S-SW | 2000 | 3,789 | 115,973 | 37,284 | 42,979 | 200,025 |
| | 2008 | 3,812 | 117,045 | 38,847 | 45,018 | 204,722 |
| | 2020 | 3,847 | 118,673 | 41,316 | 48,259 | 212,095 |
| | 2030 | 3,877 | 120,047 | 43,494 | 51,138 | 218,556 |
| | 2040 | 3,907 | 121,436 | 45,786 | 54,188 | 225,317 |
| | 2050 | 3,937 | 122,842 | 48,198 | 57,421 | 232,398 |
| | 2060 | 3,967 | 124,264 | 50,738 | 60,846 | 239,815 |
| SW | 2000 | 10,965 | 270,798 | 121,157 | 33,280 | 436,200 |
| | 2008 | 11,788 | 272,133 | 120,372 | 34,105 | 438,398 |
| | 2020 | 13,141 | 274,148 | 119,205 | 35,383 | 441,877 |
| | 2030 | 14,387 | 275,838 | 118,241 | 36,484 | 444,950 |
| | 2040 | 15,750 | 277,539 | 117,285 | 37,619 | 448,193 |
| | 2050 | 17,243 | 279,251 | 116,337 | 38,790 | 451,621 |
| | 2060 | 18,877 | 280,973 | 115,396 | 39,997 | 455,243 |
| W-SW | 2000 | 6,896 | 7,699 | 12,189 | 8,175 | 34,959 |
| | 2008 | 7,433 | 8,264 | 12,725 | 8,657 | 37,079 |
| | 2020 | 8,318 | 9,190 | 13,575 | 9,434 | 40,517 |
| | 2030 | 9,135 | 10,040 | 14,327 | 10,135 | 43,637 |
| | 2040 | 10,033 | 10,970 | 15,120 | 10,888 | 47,011 |
| | 2050 | 11,019 | 11,985 | 15,957 | 11,696 | 50,657 |
| | 2060 | 12,102 | 13,095 | 16,840 | 12,565 | 54,602 |

## Table 2.5-12 10 to 50 Mile Resident and Transient Population Projections (2000, 2008, 2020, 2030, 2040, 2050, and 2060) (Sheet 4 of 4)

| Cardinal Compass Direction | Year | Mile Range 10-20 | 20-30 | 30-40 | 40-50 | Total |
|---|---|---|---|---|---|---|
| West | 2000 | 4,676 | 6,513 | 36,417 | 30,483 | 78,089 |
| | 2008 | 5,040 | 6,968 | 38,549 | 32,267 | 82,824 |
| | 2020 | 5,640 | 7,711 | 41,985 | 35,141 | 90,477 |
| | 2030 | 6,194 | 8,390 | 45,081 | 37,731 | 97,396 |
| | 2040 | 6,803 | 9,129 | 48,405 | 40,511 | 104,848 |
| | 2050 | 7,472 | 9,933 | 51,974 | 43,497 | 112,876 |
| | 2060 | 8,206 | 10,808 | 55,807 | 46,702 | 121,523 |
| W-NW | 2000 | 4,181 | 23,120 | 27,245 | 26,576 | 81,122 |
| | 2008 | 4,515 | 25,232 | 29,915 | 29,019 | 88,681 |
| | 2020 | 5,067 | 28,768 | 34,420 | 33,112 | 101,367 |
| | 2030 | 5,578 | 32,090 | 38,688 | 36,960 | 113,316 |
| | 2040 | 6,141 | 35,796 | 43,485 | 41,256 | 126,678 |
| | 2050 | 6,760 | 39,930 | 48,877 | 46,051 | 141,618 |
| | 2060 | 7,442 | 44,541 | 54,937 | 51,403 | 158,323 |
| NW | 2000 | 21,003 | 129,325 | 148,411 | 72,477 | 371,216 |
| | 2008 | 21,223 | 141,425 | 164,240 | 84,721 | 411,609 |
| | 2020 | 21,558 | 161,731 | 191,205 | 107,075 | 481,569 |
| | 2030 | 21,842 | 180,863 | 217,028 | 130,146 | 549,879 |
| | 2040 | 22,129 | 202,258 | 246,338 | 158,189 | 628,914 |
| | 2050 | 22,420 | 226,184 | 279,607 | 192,275 | 720,486 |
| | 2060 | 22,715 | 252,941 | 317,370 | 233,704 | 826,730 |
| N-NW | 2000 | 29,054 | 229,806 | 193,348 | 164,684 | 616,892 |
| | 2008 | 28,216 | 225,322 | 203,502 | 185,988 | 643,028 |
| | 2020 | 27,004 | 218,761 | 219,742 | 223,223 | 688,730 |
| | 2030 | 26,034 | 213,440 | 234,261 | 259,885 | 733,620 |
| | 2040 | 25,099 | 208,248 | 249,739 | 302,570 | 785,656 |
| | 2050 | 24,198 | 203,182 | 266,240 | 352,265 | 845,885 |
| | 2060 | 23,329 | 198,239 | 283,831 | 410,122 | 915,521 |

## Table 2.5-13 United States Age and Gender Distribution Surrounding Fermi 3 (2000)

| Population Parameter | Low Population Zone[1] | 10 Mile Radius | Region[2] |
|---|---|---|---|
| Gender | | | |
| Male | 4,879 | 49,745 | 2,467,388 |
| Female | 4,679 | 51,186 | 2,618,762 |
| Age | | | |
| Less than 5 years | 594 | 7,118 | 347,933 |
| 5-9 years | 699 | 7,672 | 385,901 |
| 10-14 years | 829 | 7,781 | 374,869 |
| 15-19 years | 858 | 7,254 | 348,222 |
| 20-24 years | 554 | 6,281 | 326,312 |
| 25-34 years | 1249 | 13,860 | 739,901 |
| 35-44 years | 1,660 | 16,582 | 816,740 |
| 45-54 years | 1506 | 14,738 | 698,877 |
| 55-59 years | 467 | 4,903 | 240,281 |
| 60-64 years | 328 | 3,663 | 182,136 |
| 65-74 years | 455 | 5,996 | 324,723 |
| 75-84 years | 260 | 3,765 | 228,474 |
| 85 years and up | 99 | 1,318 | 71,781 |
| Total | 9,558 | 100,931 | 5,086,150 |

Methodology: CBG estimating approach

Notes:
1. Low population zone (LPZ) is defined as the area located within a 3-mile radius of Fermi 3
2. Region is defined as the area located within a 50-mile radius from Fermi 3

Source: Reference 2.5-3

## Table 2.5-14 Canadian Age and Gender Distribution Surrounding Fermi 3, 50-Mile Radius (2001)

| Population Parameter | Region[1] |
|---|---|
| Gender | |
| Male | 237,530 |
| Female | 244,775 |
| Age | |
| 0-4 years | 29,770 |
| 5-14 years | 66,905 |
| 15-19 years | 33,580 |
| 20-24 years | 31,850 |
| 25-44 years | 145,455 |
| 45-54 years | 66,350 |
| 55-64 years | 44,240 |
| 65-74 years | 34,785 |
| 75-84 years | 22,570 |
| 85 years and over | 6,810 |
| Total | 482,315 |

Notes:
1. Region is defined as the area located within a 50-mile radius from Fermi 3

Source: Reference 2.5-3

## Table 2.5-15 United States Racial and Ethnic Distribution Surrounding the Fermi Site (2000)

| | Low Population Zone[1] | 10 Mile Radius | Region[2] |
|---|---|---|---|
| Ethnicity | | | |
| African American | 120 | 2,096 | 1137912 |
| Asian | 8 | 583 | 126707 |
| Caucasian | 8,991 | 94,199 | 3547397 |
| Hawaiian | 3 | 13 | 1247 |
| Hispanic | 281 | 2,318 | 163480 |
| Native American | 44 | 365 | 16387 |
| Some Other Race | 111 | 1,357 | 93020 |
| Total | 9,558 | 100,931 | 5,086,150 |

Methodology: CBG estimating approach

Notes:
1. Low population zone (LPZ) is defined as the area located within a 3-mile radius of Fermi 3
2. Region is defined as the area located within a 50-mile radius from the planned Fermi 3

Source: Reference 2.5-3

## Table 2.5-16 Canadian Racial and Ethnic Distribution Surrounding Fermi 3, 50-mi Radius (2001)

| Ethnicity | Region[1] |
|---|---|
| Caucasian | 423,940 |
| Aboriginal | 6,165 |
| Chinese | 6,205 |
| South Asian | 6,960 |
| Black | 10,870 |
| Filipino | 3,165 |
| Latin American | 2,825 |
| Southeast Asian | 3,295 |
| Arab | 8,800 |
| West Asian | 1,180 |
| Korean | 605 |
| Japanese | 310 |
| Visible minority; n.i.e | 1,500 |
| Multiple visible minorities | 490 |
| Total | 476,310 |

Methodology: Canadian Subdivisions

Notes:
1. Region is defined as the area located within a 50-mile radius from Fermi 3

Source: Reference 2.5-3

## Table 2.5-17 United States Household Income Distribution Surrounding Fermi 3 (2000)

| Income Category | Households in the LPZ[1] | Households in the 10 Mile Radius | Households in the Region[2] |
|---|---|---|---|
| Less than $10,000 | 151 | 2,774 | 172,233 |
| $10,000 to $14,999 | 111 | 1,875 | 107,276 |
| $15,000 to $24,999 | 333 | 4,061 | 226,515 |
| $25,000 to $34,999 | 400 | 4,192 | 229,373 |
| $35,000 to $49,999 | 550 | 6,204 | 302,877 |
| $50,000 to $74,999 | 671 | 8,521 | 395,535 |
| $75,000 to $99,999 | 517 | 5,327 | 237,507 |
| $100,000 to $149,999 | 357 | 3807 | 193,007 |
| $150,000 to $199,999 | 124 | 786 | 50,281 |
| $200,000 or More | 64 | 533 | 48,531 |
| Median Household Income | $58,325 | $51,807 | $47,852 |

* Methodology: CBG estimation approach

Notes:
1. Low population zone (LPZ) is defined as the area located within a 3-mile radius of Fermi 3
2. Region is defined as the area located within a 50-mile radius from the planned Fermi 3

Source: Reference 2.5-3

## Table 2.5-18 United States County and State Median Household Income Data

| | Households | Persons per household | Median Household Income | Per capita money income | Persons below poverty, percent |
|---|---|---|---|---|---|
| | 2000 | 2000 | 2004 | 1999 | 2004 |
| **County** | | | | | |
| Jackson County, MI | 58,168 | 2.55 | $43,559 | $20,171 | 12.70% |
| Lenawee County, MI | 35,930 | 2.61 | $47,944 | $20,186 | 9.20% |
| Livingston County, MI | 55,384 | 2.80 | $71,683 | $28,069 | 5.10% |
| Macomb County, MI | 309,203 | 2.52 | $58,784 | $24,446 | 8.20% |
| Monroe County, MI | 53,772 | 2.69 | $53,838 | $22,458 | 8.70% |
| Oakland County, MI | 471,115 | 2.51 | $64,293 | $32,534 | 7.80% |
| St. Clair County, MI | 62,072 | 2.62 | $48,095 | $21,582 | 10.20% |
| Washtenaw County, MI | 125,327 | 2.41 | $55,437 | $27,173 | 11.10% |
| Wayne County, MI | 768,440 | 2.64 | $38,743 | $20,058 | 18.80% |
| Erie County, OH | 31,727 | 2.45 | $44,515 | $21,530 | 9.60% |
| Fulton County, OH | 15,480 | 2.69 | $47,958 | $18,999 | 7.10% |
| Henry County, OH | 10,935 | 2.62 | $45,573 | $18,667 | 7.30% |
| Lucas County, OH | 182,847 | 2.44 | $40,277 | $20,518 | 14.70% |
| Ottawa County, OH | 16,474 | 2.45 | $46,849 | $21,973 | 7.50% |
| Sandusky County, OH | 23,717 | 2.56 | $42,793 | $19,239 | 8.90% |
| Seneca County, OH | 22,292 | 2.56 | $39,620 | $17,027 | 9.80% |
| Wood County, OH | 45,172 | 2.51 | $46,191 | $21,284 | 8.00% |
| U.S. | 105,480,101 | 2.59 | $44,334 | $21,587 | 12.70% |
| Michigan | 3,785,661 | 2.56 | $44,409 | $22,168 | 12.50% |
| Ohio | 4,445,773 | 2.49 | $43,371 | $21,003 | 11.70% |

Source: Reference 2.5-6

## Table 2.5-19 Canadian Census Division Median Household Income Data (2001)

| | Households | Persons per household | Median household Income | Per capita money income | Persons below poverty, percent |
|---|---|---|---|---|---|
| **Subdivision** | | | | | |
| Amherstburg | 7,230 | 2.81 | $65,594 | $23,317.01 | NA |
| Chatham-Kent | 41,950 | 2.56 | $46,517 | $18,179.34 | NA |
| Essex | 7,420 | 2.71 | $57,364 | $21,191.98 | NA |
| Kingsville | 6,805 | 2.88 | $61,191 | $21,224.57 | NA |
| Lakeshore | 9,895 | 2.91 | $72,228 | $24,862.45 | NA |
| LaSalle | 8,380 | 3.02 | $81,022 | $26,852.46 | NA |
| Leamington | 9,260 | 2.93 | $48,467 | $16,537.86 | NA |
| Pelee | NA | NA | NA | NA | NA |
| Tecumseh | 8,385 | 2.99 | $80,991 | $27,050.77 | NA |
| Walpole | NA | NA | NA | NA | NA |
| Windsor | 83,825 | 2.49 | $46,949 | $18,884.18 | NA |
| **Province** | | | | | |
| Ontario | 4,219,410 | 2.70 | $53,626 | $19,830.78 | NA |

Source: Reference 2.5-3

## Table 2.5-19-A Population Data for the Fermi 3 Region Counties and Selected Cities

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|
| Michigan | 9,938,444 | 10,004,341 | 10,037,303 | 10,065,881 | 10,090,280 | 10,093,266 | 10,083,878 | 10,049,790 | 10,003,422 |
| Monroe | 145,945 | 147,631 | 148,566 | 149,649 | 151,041 | 152,242 | 153,150 | 153,331 | 152,949 |
| Monroe City | 22,076 | 21,769 | 21,589 | 21,573 | 21,604 | 21,599 | 21,616 | 21,488 | 21,374 |
| Wayne | 2,061,162 | 2,058,087 | 2,052,396 | 2,044,832 | 2,035,701 | 2,024,183 | 2,009,204 | 1,981,654 | 1,949,929 |
| City of Detroit | 951,270 | 935,637 | 927,802 | 926,035 | 923,352 | 920,675 | 918,849 | 916,936 | 912,062 |
| Oakland | 1,194,156 | 1,201,330 | 1,200,284 | 1,203,036 | 1,205,936 | 1,205,877 | 1,204,666 | 1,202,287 | 1,202,174 |
| Livingston | 156,951 | 163,333 | 168,102 | 171,644 | 175,739 | 179,427 | 182,075 | 182,655 | 182,575 |
| Macomb | 788,149 | 800,000 | 807,173 | 813,733 | 820,633 | 825,228 | 828,282 | 829,364 | 830,663 |
| Washtenaw | 322,895 | 329,239 | 333,636 | 337,093 | 340,725 | 344,025 | 346,185 | 347,969 | 347,376 |
| Jackson | 158,422 | 159,761 | 160,802 | 161,839 | 161,790 | 162,573 | 162,867 | 162,706 | 160,180 |
| Lenawee | 98,890 | 99,586 | 100,185 | 100,491 | 100,945 | 100,983 | 101,313 | 101,345 | 100,801 |
| St. Clair | 164,235 | 165,824 | 166,721 | 168,359 | 169,548 | 169,525 | 170,187 | 169,840 | 168,894 |
| Ohio | 11,353,140 | 11,391,298 | 11,410,582 | 11,430,306 | 11,445,095 | 11,450,954 | 11,458,390 | 11,477,641 | 11,485,910 |
| Lucas | 455,054 | 454,392 | 453,244 | 452,015 | 449,044 | 446,458 | 443,908 | 442,408 | 440,456 |
| City of Toledo | 313,619 | 311,848 | 309,684 | 307,750 | 304,112 | 301,144 | 297,618 | 295,614 | 293,201 |
| Fulton | 42,084 | 42,152 | 42,205 | 42,254 | 42,576 | 42,633 | 45,512 | 42,482 | 42,485 |
| Ottawa | 40,985 | 40,972 | 40,915 | 41,127 | 41,302 | 41,294 | 41,200 | 41,069 | 40,823 |
| Henry | 29,210 | 29,135 | 29,236 | 29,143 | 29,160 | 29,185 | 29,210 | 28,902 | 28,841 |
| Sandusky | 61,792 | 61,675 | 61,684 | 61,398 | 61,431 | 61,233 | 61,110 | 60,927 | 60,637 |
| Seneca | 58,683 | 58,314 | 57,943 | 57,755 | 57,532 | 57,246 | 56,860 | 56,688 | 56,461 |
| Erie | 79,551 | 79,228 | 78,643 | 78,472 | 78,365 | 77,786 | 77,423 | 77,162 | 77,062 |
| Wood | 121,065 | 121,891 | 121,951 | 122,358 | 123,569 | 123,975 | 124,127 | 124,811 | 125,340 |
| Total, Region Counties | 5,979,229 | 6,012,550 | 6,023,686 | 6,035,198 | 6,045,037 | 6,043,873 | 6,034,279 | 6,005,600 | 5,967,646 |

Source: U.S. Census Bureau, Population Estimates, 2008 Estimates of Incorporated Places and Minor Civil Divisions, All States, incorporated places only. Available at http://www.census.gov/popest/cities/cities.html

## Table 2.5-20 Regional Employment Data (2000 and 2006)

| | | 2000 | | | | 2006 | | | | 2000-2006 Percent Change in Employment |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Labor Force | Employ-ment | Unemploy-ment | Unemploy-ment Rate, Percent | Labor Force | Employ-ment | Unemploy-ment | Unemploy-ment Rate, Percent | |
| Michigan Counties | Monroe | 77,194 | 74,756 | 2,438 | 3.2 | 79,051 | 73,936 | 5,115 | 6.5 | -1.1 |
| | Wayne | 952,300 | 911,069 | 41,231 | 4.3 | 894,058 | 818,844 | 75,214 | 8.4 | -10.1 |
| | Jackson | 79,088 | 76,396 | 2,692 | 3.4 | 78,785 | 73,160 | 5,625 | 7.1 | -4.2 |
| | Lenawee | 51,699 | 49,769 | 1,930 | 3.7 | 50,586 | 46,897 | 3,689 | 7.3 | -5.8 |
| | Livingston | 89,687 | 87,314 | 2,373 | 2.6 | 94,228 | 89,214 | 5,014 | 5.3 | 2.2 |
| | Macomb | 433,912 | 418,171 | 15,741 | 3.6 | 421,446 | 391,252 | 30,194 | 7.2 | -6.4 |
| | Oakland | 675,896 | 656,461 | 19,435 | 2.9 | 630,690 | 594,361 | 36,329 | 5.8 | -9.5 |
| | Washtenaw | 185,202 | 180,898 | 4,304 | 2.3 | 191,462 | 182,667 | 8,795 | 4.6 | 1.0 |
| Ohio Counties | Lucas | 227,304 | 217,049 | 10,255 | 4.5 | 226,172 | 211,883 | 14,289 | 6.3 | -2.4 |
| | Fulton | 22,695 | 21,786 | 909 | 4.0 | 23,387 | 21,998 | 1,389 | 5.9 | 1.0 |
| | Henry | 15,272 | 14,618 | 654 | 4.3 | 16,173 | 15,197 | 976 | 6.0 | 4.0 |
| | Erie | 42,168 | 40,380 | 1,788 | 4.2 | 42,663 | 40,145 | 2,518 | 5.9 | -0.6 |
| | Ottawa | 21,404 | 20,320 | 1,084 | 5.1 | 21,944 | 20,412 | 1,532 | 7.0 | 0.5 |
| | Sandusky | 32,819 | 31,453 | 1,366 | 4.2 | 33,427 | 31,508 | 1,919 | 5.7 | 0.2 |
| | Seneca | 30,954 | 29,629 | 1,325 | 4.3 | 31,431 | 29,769 | 1,662 | 5.3 | 0.5 |
| | Wood | 66,346 | 64,027 | 2,319 | 3.5 | 68,447 | 64,857 | 3,590 | 5.2 | 1.3 |
| Region | | 3,091,011 | 2,977,479 | 113,532 | 3.7 | 2,988,136 | 2,783,519 | 204,617 | 6.8 | -6.5 |
| Detroit CSA | | 2,700,947 | 2,544,486 | 156,461 | 5.8 | 2,714,017 | 2,439,109 | 274,908 | 10.1 | -4.1 |
| Toledo MSA | | 317,744 | 302,749 | 14,995 | 4.7 | 344,837 | 316,706 | 28,131 | 8.2 | 4.6 |

Source: Reference 2.5-72 through Reference 2.5-74

## Table 2.5-21 Area Employment by Industry (2000 and 2006) (Sheet 1 of 2)

| | Monroe County | | Wayne County | | Lucas County | | Detroit CSA | | Toledo MSA | | Region |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Industry** | **2000** | **2006** | **2000** | **2006** | **2000** | **2006** | **2000** | **2006** | **2000** | **2006** | **2000** |
| Agriculture, forestry, fishing and hunting, and mining | 894 | 788 | 1,044 | 965 | 866 | 440 | 6,405 | 6,965 | 918 | 2,581 | 12,409 |
| Construction | 5,370 | 5,299 | 39,296 | 34,634 | 12,230 | 12,028 | 152,923 | 133,451 | 14,787 | 18,614 | 156,170 |
| Manufacturing | 18,120 | 14,587 | 185,856 | 144,883 | 38,774 | 33,003 | 571,992 | 464,139 | 54,833 | 54,404 | 634,663 |
| Wholesale trade | 2,307 | 2,402 | 26,904 | 24,153 | 8,411 | 6,791 | 85,105 | 78,589 | 12,491 | 9,444 | 94,005 |
| Retail trade | 8,430 | 8,811 | 90,905 | 84,515 | 25,977 | 24,467 | 293,743 | 277,391 | 35,712 | 37,328 | 321,218 |
| Transportation and warehousing, and utilities | 5,112 | 5,388 | 54,387 | 46,478 | 11,599 | 12,552 | 108,062 | 103,280 | 19,029 | 19,821 | 130,039 |
| Information | 973 | 1,188 | 21,231 | 19,086 | 4,079 | 4,058 | 66,888 | 56,068 | 5,855 | 5,788 | 65,196 |
| Finance and insurance, and real estate and rental and leasing | 2,669 | 4,224 | 50,591 | 53,936 | 10,258 | 11,421 | 143,764 | 157,182 | 16,252 | 15,016 | 157,808 |
| Professional, scientific, and management, and administrative and waste management services | 4,012 | 5,093 | 77,890 | 74,914 | 19,036 | 16,845 | 247,998 | 255,136 | 24,961 | 25,169 | 267,823 |
| Educational services, and health care, and social assistance | 12,891 | 16,499 | 158,342 | 164,573 | 46,342 | 51,115 | 470,184 | 519,322 | 61,939 | 76,213 | 542,599 |
| Arts, entertainment, and recreation, and accommodation, and food services | 4,894 | 6,620 | 68,026 | 72,197 | 17,110 | 17,714 | 203,540 | 208,121 | 33,343 | 29,063 | 204,648 |
| Other services, except public administration | 3,054 | 3,726 | 42,366 | 37,643 | 10,226 | 8,652 | 115,713 | 106,692 | 13,087 | 13,246 | 125,170 |

## Table 2.5-21 Area Employment by Industry (2000 and 2006) (Sheet 2 of 2)

| | Monroe County | | Wayne County | | Lucas County | | Detroit CSA | | Toledo MSA | | Region |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Industry** | **2000** | **2006** | **2000** | **2006** | **2000** | **2006** | **2000** | **2006** | **2000** | **2006** | **2000** |
| Public administration | 1,618 | 2,937 | 34,272 | 26,042 | 7,111 | 6,666 | 78,169 | 72,773 | 9,542 | 10,019 | 91,589 |

Source: Reference 2.5-64 through Reference 2.5-74

## Table 2.5-22 Employment by Industry for Canadian Counties in the 50-mi Region (2001)

| Industry | Employment |
|---|---|
| Agriculture and other resource-based industries | 18,740 |
| Manufacturing and construction industries | 94,290 |
| Wholesale and retail trade | 43,595 |
| Finance and real estate | 11,385 |
| Health and education | 45,195 |
| Business services | 39,345 |
| Other services | 58,580 |

Includes the Canadian counties of Essex, Chatham-Kent, and Lambton that lie within the 50-mile radius of Fermi 3.

Source: Reference 2.5-75 through Reference 2.5-77

## Table 2.5-23 Monroe County Principal Employers (2006 and 1998)

| Employer | Employees, 2006 | Percent of Total County Employment | Employees, 1998 | Percent of Total County Employment |
|---|---|---|---|---|
| Automotive Components Holdings (Formerly Visteon Corporation) | 2,000 | 3.39 | 1,400 | 2.58 |
| Detroit Edison Corp. | 1,500 | 2.55 | 1,480 | 2.72 |
| Mercy Memorial Hospital | 1,300 | 2.21 | 811 | 1.49 |
| Meijer Inc. | 1,025 | 1.74 | 900 | 1.66 |
| Monroe Public Schools | 1,000 | 1.70 | 803 | 1.48 |
| Monroe County | 741 | 1.26 | 786 | 1.45 |
| Bedford Public Schools | 725 | 1.23 | 515 | 0.95 |
| Cabela's | 650 | 1.10 | - | 0.00 |
| MacSteel (Formerly North Star Steel) | 500 | 0.85 | - | 0.00 |
| Monroe Auto Equipment | 500 | 0.85 | 500 | 0.92 |
| Guardian Industries Corp. | 500 | 0.85 | 500 | 0.92 |
| La-Z-Boy Inc | 500 | 0.85 | 500 | 0.92 |
| Totals | 10,941 | 18.57 | 8,195 | 15.08 |

Source: Reference 2.5-78

## Table 2.5-24 Charter County of Wayne, Michigan Principal Employers (2007 and 1998)

| | 2007 | | 1998 | |
|---|---|---|---|---|
| Employer | Employees | Percentage of Total County Employment | Employees | Percentage of Total County Employment |
| Ford Motor Company | 42,309 | 5.23 | 57,659 | 6.33 |
| Detroit Public Schools | 17,329 | 2.14 | 17,286 | 1.90 |
| City of Detroit | 13,593 | 1.68 | 17,302 | 1.90 |
| Henry Ford Health System | 11,475 | 1.42 | 9,872 | 1.08 |
| Detroit Medical Center | 10,190 | 1.26 | 13,967 | 1.90 |
| U.S. Postal Service | 9,396 | 1.16 | | |
| Chrysler LLC * | 9,000 | 1.11 | 15,834 | 1.53 |
| General Motors Corporation | 7,843 | 0.97 | 11,067 | 1.22 |
| Oakwood Healthcare Inc. | 7,510 | 0.93 | 6,653 | 1.74 |
| U.S. Government | 7,417 | 0.92 | 14,140 | 0.73 |
| St. John Health System | - | | 7,136 | 0.78 |
| Total | 136062 | 16.83 | 170,916 | 6.00 |
| Total Wayne County Employment | 808,380 | | 910,396 | |

Source: Reference 2.5-79

## Table 2.5-25    Lucas County Principal Employers (2007 and 1997)

| Top 2006 Private & Public Employers | | | Top 1997 Private & Public Employers | | |
|---|---|---|---|---|---|
| Employer | Number of Employees | Percentage of Total Employment | Employer | Number of Employees | Percentage of Total Employment |
| ProMedica Health Systems | 11,265 | 5.31% | Mercy Health Partners | 6,680 | 3.06% |
| Mercy Health Partners | 6,723 | 3.17% | Daimler-Chrysler/Toledo Jeep | 5,400 | 2.47% |
| University of Toledo | 4,987 | 2.35% | Toledo Public Schools | 5,319 | 2.44% |
| Toledo Public Schools | 4,554 | 2.15% | University of Toledo | 5,245 | 2.40% |
| Lucas County | 4,168 | 1.96% | General Motors/Power Train | 4,600 | 2.11% |
| Daimler-Chrysler/Toledo Jeep | 3,548 | 1.67% | Seaway Foodtown | 4,548 | 2.08% |
| Kroger | 3,503 | 1.65% | Toledo Hospital | 4,506 | 2.06% |
| U.T. Health Science Campus | 3,300 | 1.56% | Lucas County | 4,300 | 1.97% |
| City of Toledo | 2,979 | 1.40% | Medical University of Ohio | 3,442 | 1.58% |
| State of Ohio | 2,487 | 1.17% | City ·of Toledo | 3,017 | 1.38% |
| General Motors/Power Train | 2,112 | 1.00% | Andersons | 2,962 | 1.36% |
| United Parcel Service | 2,108 | 0.99% | Kroger | 2,667 | 1.22% |
| Andersons | 1,766 | 0.83% | Meijers | 2,000 | 0.92% |
| HCR Manor Care | 1,745 | 0.82% | State of Ohio | 1,990 | 0.91% |
| Meijers | 1,721 | 0.81% | United Parcel Service | 1,946 | 0.89% |
| Top ten total employed | 56,966 | 26.85% | Top Ten Total Employed | 58,622 | 26.85% |
| Total Employed in Lucas County | 212164 | | Total Employed in Lucas County | 218331 | |

Source: Reference 2.5-80

## Table 2.5-26 Detroit MSA and Michigan Industry Employment Forecasts (2004 – 2014) (Sheet 1 of 2)

| | | Detroit MSA | | | | Michigan | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Employment | | Change | | Employment | | Change | |
| | | 2004 | 2014 | Level | Percent | 2004 | 2014 | Level | Percent |
| Total Wage and Salary Employment | | 2,026,680 | 2,166,530 | 139,850 | 6.9 | 4,394,360 | 4,743,180 | 348,820 | 7.9 |
| Natural Resources and Mining | | 1,190 | 1,160 | -30 | -2.0 | 8,160 | 7,900 | -260 | -3.1 |
| Construction | | 82,610 | 89,020 | 6,410 | 7.7 | 191,540 | 208,620 | 17,080 | 8.9 |
| Manufacturing | | 295,640 | 262,070 | -33,570 | -11.4 | 697,290 | 653,070 | -44,220 | -6.3 |
| | Durable Goods | 250,990 | 217,310 | -33,680 | -13.4 | 547,950 | 503,050 | -44900 | -8.2 |
| | Nondurable Goods | 44,650 | 44,750 | 100 | 0.2 | 149,340 | 150,010 | 670 | 0.5 |

## Table 2.5-26 Detroit MSA and Michigan Industry Employment Forecasts (2004 – 2014) (Sheet 2 of 2)

| | | Detroit MSA | | | | Michigan | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Employment | | Change | | Employment | | Change | |
| | | 2004 | 2014 | Level | Percent | 2004 | 2014 | Level | Percent |
| Service Industries | | 1,647,240 | 1,814,290 | 167,050 | 10.1 | 3,497,370 | 3,873,590 | 376,220 | 10.8 |
| | Wholesale Trade | 92,900 | 100,500 | 7,600 | 8.2 | 170,600 | 185,060 | 14460 | 8.5 |
| | Retail Trade | 223,150 | 231,810 | 8,660 | 3.9 | 513,680 | 539,340 | 25660 | 5.0 |
| | Transportation, Warehousing and Utilities | 82,490 | 86,640 | 4,150 | 5 | 153,680 | 162,160 | 8480 | 5.5 |
| | Information | 36,560 | 38,050 | 1,490 | 4.1 | 68,560 | 71,030 | 2470 | 3.6 |
| | Finance and Insurance | 85,100 | 88,800 | 3,700 | 4.3 | 161,320 | 172,080 | 10760 | 6.7 |
| | Real Estate and Rental Leasing | 30,610 | 32,570 | 1,960 | 6.4 | 56,110 | 60,180 | 4070 | 7.3 |
| | Professional and Business Services | 362,210 | 430,630 | 68,420 | 18.9 | 584,700 | 700,550 | 115850 | 19.8 |
| | Educational and health Services | 381,780 | 424,720 | 42,940 | 11.2 | 950,610 | 1,070,320 | 119,710 | 12.6 |
| | Leisure and Hospitality | 182,010 | 201,380 | 19,370 | 10.6 | 402,020 | 451,130 | 49110 | 12.2 |
| | Other Services | 74,620 | 80,680 | 6,060 | 8.1 | 178,000 | 195,840 | 17840 | 10.0 |
| | Government | 95,810 | 98,540 | 2,730 | 2.8 | 258,100 | 265,900 | 7800 | 3.0 |

MSA COMPOSITION: Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne Counties

Source: Reference 2.5-81 and Reference 2.5-82

## Table 2.5-27 Toledo MSA Industry Employment Projections Report (2004-2014) (Sheet 1 of 2)

| Industry | 2004 Annual Employment | 2014 Projected Employment | Change in Employment 2004-2014 | Percent Change 2004-2014 |
|---|---|---|---|---|
| Goods-Producing | 71,000 | 66,770 | -4,230 | -6.0 |
| Natural Resources and Mining | 4,000 | 3,760 | -240 | -6.0 |
| Construction | 15,150 | 16,190 | 1,040 | 6.9 |
| Manufacturing | 51,850 | 46,820 | -5,030 | -9.7 |
| Service-Providing | 255,640 | 282,630 | 26,990 | 10.6 |
| Trade, Transportation and Utilities | 64,360 | 68,120 | 3,760 | 5.8 |
| Wholesale Trade | 13,390 | 14,100 | 710 | 5.3 |
| Retail Trade | 37,540 | 40,220 | 2,680 | 7.1 |
| Transportation and Warehousing | 11,760 | 12,220 | 460 | 3.9 |
| Utilities | 1,670 | 1,580 | -90 | -5.4 |
| Information | 4,560 | 4,860 | 300 | 6.6 |
| Financial Activities | 13,050 | 13,890 | 840 | 6.4 |
| Finance and Insurance | 8,640 | 9,110 | 470 | 5.4 |
| Real Estate and Rental and Leasing | 4,410 | 4,780 | 370 | 8.4 |
| Professional and Business Services | 33,950 | 39,020 | 5,070 | 14.9 |
| Professional, Scientific & Technical Services | 11,130 | 12,910 | 1,780 | 16.0 |
| Management of Companies and Enterprises | 3,250 | 3,310 | 60 | 1.8 |
| Administrative and Waste Services | 19,570 | 22,800 | 3,230 | 16.5 |
| Education and Health Services | 47,370 | 55,870 | 8,500 | 17.9 |
| Educational Services | 4,310 | 4,460 | 150 | 3.5 |
| Health Care & Social Assistance | 43,060 | 51,410 | 8,350 | 19.4 |

## Table 2.5-27 Toledo MSA Industry Employment Projections Report (2004-2014) (Sheet 2 of 2)

| Industry | 2004 Annual Employment | 2014 Projected Employment | Change in Employment 2004-2014 | Percent Change 2004-2014 |
|---|---|---|---|---|
| Leisure and Hospitality | 32,620 | 36,440 | 3,820 | 11.7 |
| Arts, Entertainment & Recreation | 4,880 | 5,550 | 670 | 13.7 |
| Accommodation and Food Services | 27,740 | 30,890 | 3,150 | 11.4 |
| Other Services | 15,150 | 16,580 | 1,430 | 9.4 |
| Government | 44,580 | 47,850 | 3,270 | 7.3 |
| Federal Government | 2,570 | 2,510 | -60 | -2.3 |
| State Government | 11,650 | 12,160 | 510 | 4.4 |
| Local Government | 30,360 | 33,180 | 2,820 | 9.3 |
| Self-Employed, Private Household and Unpaid Family Workers | 19,580 | 21,720 | 2,140 | 10.9 |

MSA COMPOSITION: Fulton, Lucas, Ottawa and Wood Counties

Source: Reference 2.5-83

## Table 2.5-28 Recent and Projected Major Employment Changes within Monroe County

| Employer | City | Job Change | Source | Notice Date | Effective Date | Comment |
|---|---|---|---|---|---|---|
| Splash Universe | Dundee | 200 | Monroe News | 11/9/2006 | 1/22/2007 | 25,000 square foot water park, $25 million investment |
| Backyard Storage Solutions | Monroe | 130 | Monroe News | 11/6/2006 | 1/15/2007 | Site of vacant Lear Corporation Plant, 1000 Ternes Dr, $5 million investment, consolidating from Warren and Detroit |
| Ciena Healthcare of Southfield | Frenchtown | 100 | Monroe News | 11/2/2006 | 12/1/2007 | New 120 bed skilled care facility 1971 N. Monroe Street on 11.2 acres |
| Ford Motor Company | Monroe | -1200 | Monroe News | 8/25/2007 | 12/30/2008 | Closing Automotive Component Holdings (ACH), 3200 E. Elm Ave, 48162 |

## Table 2.5-28(A) Regional Union Construction Labor Force and Wage by Major Craft Occupation

| Primary Coverage Unions | Location | Area Total Journeymen | Area Total Apprentices | Base Journeyman Wages ($2008) |
|---|---|---|---|---|
| Iron Worker #55 | Toledo | 661 | 72 | 28.00 |
| Boiler Makers #85 | Toledo | 256 | 144 | 33.43 |
| Electrician #8 | Toledo | 1,520 | 194 | 34.00 |
| Operating Eng. #324 | Michigan (State wide) | 4,500 | 77 | 32.75 |
| Brick Layer-Allied | SEM* | 1,550 | 138 | 29.00 |
| Pipefitter/Plumber #671 | Monroe | 335 | 21 | 32.32 |
| Cement Mason #886 | SEM* | 400 | 24 | 28.00 |
| Sheet Metal Worker #33 | SEM* | 400 | 50 | 29.00 |
| Carpenters | SEM* | 4,391 | 338 | 30.16 |
| Laborers #959SEM* | 1,091 | 63 | 26.28 | |
| Insulators #45 | Toledo | 110 | 57 | 29.37 |
| Other Union Hall Locations | | | | |
| Iron Workers #25 | Detroit | 2,500 | 200 | 29.00 |
| Boiler Makers #169 | Detroit | 444 | 146 | 32.89 |
| Electrician #58 | Detroit | 4,024 | 275 | 35.85 |
| Pipefitter/Plumbers #636 | Detroit | 1,650 | 140 | 36.25 |
| Insulators #25 | Detroit | 195 | 35 | 30.77 |

*SEM- Southeast Michigan
**Detroit Edison personnel collected this information from local union leaders in Sept. 2009

## Table 2.5-28(B) Michigan and Ohio Construction Labor Force

| | Michigan 2006 (Actual) | Michigan 2016 (Projected) | Ohio 2006 (Actual) | Ohio 2016 (Projected) |
|---|---|---|---|---|
| Iron Workers | 1,770 | 1,850 | 3,590 | 3,800 |
| Boilermakers | 520 | 580 | 590 | 670 |
| Electricians/Instrument Fitters | 24,000 | 30,190 | 30,400 | |
| Operating Engineers | 9,090 | 9,680 | 12,080 | 12,950 |
| Pipefitters | 15,060 | 15,760 | 18,120 | 19,110 |
| Cement Masons | 4,140 | 4,940 | 6,610 | 7,340 |
| Sheetmetal Workers | 4,960 | 5,190 | 5,770 | 5,750 |
| Carpenters | 31,710 | 33,710 | 41,220 | 44,930 |
| Laborers | 27,240 | 29,330 | 32,330 | 35,270 |
| Insulators | 960 | 1,040 | 1,720 | 1,830 |
| Millwrights | 5,500 | 5,520 | 5,410 | 4,550 |
| Painters | 8,580 | 9,090 | 12,620 | 13,970 |
| Teamsters/Truckers | 87,510 | 96,620 | 116,930 | 126,530 |

Sources: Reference 2.5-136 and Reference 2.5-137

**Table 2.5-28(C) Michigan and Ohio Nuclear Operations Labor Force and Wages**

| Occupation | Michigan 2006 Actual | Michigan 2016 Projected | Michigan Average Hourly Wage 2008 | Ohio 2006 Actual | Ohio 2016 Projected | Ohio Average Hourly Wage 2008 |
|---|---|---|---|---|---|---|
| General and Operations Managers | 36,460 | 35,450 | $47.98 | 56,770 | 54,430 | $49.06 |
| Accountants and Auditors | 34,290 | 38,230 | $30.79 | 49,080 | 54,050 | $29.55 |
| Computer Software Engineers Applications and Systems Software | 19,420 | 24,400 | $38.63 | 23,770 | 31,760 | $39.76 |
| Network and Computer System Administrators | 7,850 | 9,270 | $30.96 | 12,020 | 14,510 | $31.18 |
| Chemical Engineers | 1,050 | 1,160 | $38.92 | 1,530 | 1,570 | $41.15 |
| Civil Engineers | 6,190 | 6,870 | $33.58 | 5990 | 6460 | $34.20 |
| Electrical Engineers | 6,370 | 6,790 | $37.04 | 4,440 | 4,500 | $34.93 |
| Mechanical Engineers | 24,730 | 25,970 | $38.13 | 11,350 | 10,630 | $33.25 |
| Nuclear Technicians | 90 | 90 | $35.27 | 400 | 400 | $28.04 |
| Security Guards | 25,360 | 27,600 | $12.21 | 31,390 | 33,680 | $11.99 |
| Office & Administration Support Occupations | 699,660 | 723,590 | $15.71 | 917,670 | 943,850 | $15.11 |
| Nuclear Power Reactor Operators | NA | NA | $33.31 | 150 | 160 | $31.24 |
| Power Distributors and Dispatches | 490 | 470 | $32.19 | 160 | 140 | $26.27 |
| Power Plant Operators | 1,640 | 1,680 | $27.13 | 1,260 | 1,220 | $28.22 |
| Stationary Engineers and Boiler Operators | 1,310 | 1,320 | $26.20 | 2,080 | 1,970 | $24.07 |

Sources: Reference 2.5-136 and Reference 2.5-137

## Table 2.5-29 Monroe County Direct and Overlapping Property Rates (2001-2005) (Rate per $1,000 of Taxable Value)

| | Tax Levy Year | | | | |
|---|---|---|---|---|---|
| | **2001** | **2002** | **2003** | **2004** | **2005** |
| County Direct Rates | 4.84 | 4.83 | 4.79 | 4.81 | 4.80 |
| Jail Bond | 0.16 | 0.16 | 0.10 | 0.11 | 0.11 |
| Senior Citizen | 0.49 | 0.49 | 0.48 | 0.49 | 0.50 |
| Total Direct Rate | 5.49 | 5.49 | 5.39 | 5.40 | 5.41 |
| Overlapping Rates | | | | | |
| Cities: | | | | | |
| Luna Pier | 13.12 | 12.76 | 10.07 | 11.11 | 11.80 |
| Milan | 18.96 | 19.21 | 18.83 | 18.82 | 18.71 |
| Monroe | 15.32 | 15.33 | 15.34 | 15.46 | 15.80 |
| Petersburg | 23.94 | 21.38 | 21.57 | 20.34 | 20.71 |
| | | | | | |
| Township (average) | 2.64 | 2.87 | 2.91 | 2.91 | 2.72 |
| | | | | | |
| School Districts (average) | 27.51 | 27.41 | 25.99 | 26.97 | 26.80 |
| | | | | | |
| Intermediate School Districts (average) | 4.38 | 4.72 | 4.69 | 4.92 | 4.89 |
| | | | | | |
| Community College | 2.20 | 2.19 | 2.18 | 2.19 | 2.18 |
| | | | | | |
| Library | 0.82 | 0.82 | 0.81 | 1.00 | 1.00 |

Source: Reference 2.5-78

## Table 2.5-30 Monroe County Assessed and Estimated True Cash Value of Taxable Property (2001-2005)

| Tax Year | Residential Property | Agricultural Property | Commercial Property | Industrial Property | Developmental Property |
|---|---|---|---|---|---|
| 2001 | $3,066,123,121 | $293,630,302 | $519,720,689 | $1,163,041,197 | $11,622,138 |
| 2002 | $3,343,306,250 | $316,306,273 | $588,621,309 | $1,127,474,795 | $12,978,813 |
| 2003 | $3,591,071,882 | $342,155,453 | $638,975,155 | $1,113,076,146 | $16,428,886 |
| 2004 | $3,868,050,728 | $373,425,880 | $695,883,009 | $1,081,071,159 | $24,187,555 |
| 2005 | $4,171,394,039 | $437,947,734 | $731,115,107 | $1,042,462,771 | $45,988,525 |

| Tax Year | Personal Property | Total Assessed Value | Total Direct Tax Rate | Estimated True Cash Value |
|---|---|---|---|---|
| 2001 | $471,793,096 | $5,525,930,543 | 5.4843 | $11,112,871,803 |
| 2002 | $488,638,679 | $5,877,326,118 | 5.4768 | $11,823,516,893 |
| 2003 | $464,976,294 | $6,166,683,816 | 5.3773 | $12,412,251,677 |
| 2004 | $475,914,907 | $6,518,532,638 | 5.4046 | $13,110,642,494 |
| 2005 | $489,137,589 | $6,918,045,765 | 5.4052 | $13,926,131,767 |

Note:
Residential, commercial and industrial values are calculated without tax-exempt values.

Source: Reference 2.5-78

## Table 2.5-31 Monroe County's Largest Property Tax Payers

| | 2006 Tax Levy | | | 1997 Tax Levy | | |
|---|---|---|---|---|---|---|
| Taxpayer | Taxable Assessed Value | Rank | Percent of County Total | Taxable Assessed Value | Rank | Percent of County Total |
| Detroit Edison | $822,719,335 | 1 | 12.62 | $1,178,001,644 | 1 | 31.36 |
| Automotive Components Holding (formerly Visteon) | $104,799,157 | 2 | 1.61 | $100,559,120 | 2 | 2.68 |
| Consumers Power Co. | $75,254,259 | 3 | 1.15 | $73,019,791 | 3 | 1.94 |
| Macsteel Monroe (formerly North Star) | $29,832,080 | 4 | 0.46 | $24,721,540 | 4 | 0.66 |
| Goodwill Co. (Meijer) | $23,780,814 | 5 | 0.36 | $17,705,690 | 8 | 0.47 |
| Holam Inc. (Holcim) | $23,088,046 | 6 | 0.35 | $23,470,696 | 5 | 0.62 |
| International Transmission Co. | $22,524,233 | 7 | 0.35 | - | - | - |
| Cabela's | $18,305,544 | 8 | 0.28 | - | - | - |
| Frenchtown Square | $18,253,393 | 9 | 0.28 | $14,910,450 | 9 | 0.40 |
| Aquila (formerly Michigan Gas Utilities) | $17,129,162 | 10 | 0.26 | - | - | - |
| Utilicorp | | | | $19,239,648 | 6 | 0.51 |
| TWB/Worthington Steel | | | | $18,532,700 | 7 | 0.49 |
| Tenneco | | | | $11,118,300 | 10 | 0.30 |
| Totals | $1,155,686,023 | | 17.73 | $1,481,279,579 | | 39.44 |

Source: Reference 2.5-78

## Table 2.5-32 Charter County of Wayne Principal Property Taxpayers (Fiscal Year 2007)

| Firm | Total Assessment ($) | Percentage of State Equalized Value |
|---|---|---|
| Ford Motor Company | 1,560,809,660 | 2.42 |
| DTE Energy | 1,009,871,003 | 1.57 |
| Daimler Chrysler Corp. | 425,214,864 | 0.66 |
| General Motors Corp. | 298,624,472 | 0.46 |
| United States Steel | 213,766,632 | 0.33 |
| MGM Grand Detroit LLC | 164,692,964 | 0.26 |
| Marathon Oil/ Ashland Petroleum LLC | 157,376,388 | 0.24 |
| Auto Alliance Int'l Inc. | 136,153,300 | 0.21 |
| Severstal Steel Company | 114,684,000 | 0.18 |
| ATT Mobility LLC (f/n/a Cingular) | 88,934,491 | 0.14 |
| Total | 4,170,127,774 | 6.48 |
| Total State Equalized Value (S.E.V.) | 64,401,640,723 | |

Source: Reference 2.5-79

**Table 2.5-33 Lucas County Top Ten Private Sector Principal Tax Payers, December 31, 2006 (Amount's in 000's)**

| Firm | 2006 Assessed Real Estate Values ($) | 2006 Assessed Personal Property Values ($) | 2006 Assessed Property Values ($) | 2006 Percent Firms Assessed Value to Total 2006 Assessed Property Value |
|---|---|---|---|---|
| Sunoco Inc. R&M. | 4,467 | 58,128 | 62,595 | 0.60 |
| Westfield Shopping Town | 53,092 | 226 | 53,318 | 0.55 |
| General Motors Hydra-Matic | 8,684 | 42,553 | 51,237 | 0.53 |
| BP America | 3,455 | 41,800 | 45,255 | 0.46 |
| Daimler Chrysler | 22,329 | 20,758 | 43,087 | 0.45 |
| D-Serf Co. | 31,935 | 2800 | 34,735 | 0.36 |
| the Andersons | 12,704 | 13,148 | 25,852 | 0.27 |
| Johns Manville | 3,628 | 16,876 | 20,504 | 0.21 |
| Meijer Stores | 14,006 | 5,959 | 19,965 | 0.20 |
| AERC | 19,097 | | 19,097 | 0.20 |
| Totals | 173,397 | 202,248 | 375,645 | 3.83 |

Source: Reference 2.5-80

## Table 2.5-34 Frenchtown Township Total Revenue and Property Tax Comparison

| Year | Total Township Revenue ($) | Property Tax Revenue ($) (Real & Personal) | Percentage of Revenue Represented by Property Tax |
|---|---|---|---|
| 1989 | 2,502,529 | 1,063,216 | 42 |
| 1990 | 3,350,400 | 1,882,777 | 56 |
| 1991 | 4,924,871 | 3,452,922 | 70 |
| 1992 | 4,993,449 | 3,433,995 | 69 |
| 1993 | 3,062,207 | 1,196,911 | 39 |
| 1994 | 2,839,926 | 1,089,096 | 38 |
| 1995 | 3,867,160 | 1,854,690 | 48 |
| 1996 | 4,157,927 | 1,993,122 | 48 |
| 1997 | 5,284,861 | 2,717,749 | 51 |
| 1998 | 5,599,801 | 2,786,677 | 50 |
| 1999 | 5,393,789 | 2,806,568 | 52 |
| 2000 | 5,008,096 | 2,903,052 | 58 |
| 2001 | 5,142,750 | 2,822,404 | 55 |

Source: Reference 2.5-11

## Table 2.5-35 Taxable Value of Property in Frenchtown Township(in thousands of dollars)(Sheet 1 of 2)

| | | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
|---|---|---|---|---|---|---|---|---|---|
| Industrial | Dollar total | 704,294 | 810,408 | 828,039 | 833,739 | 841,360 | 836,232 | 764,600 | 754,412 |
| | Percent of Total | 67 | 77 | 78 | 79 | 80 | 79 | 72 | 71 |
| Agricultural | Dollar total | 11,610 | 11,456 | 12,202 | 13,427 | 13,364 | 13,269 | 12,620 | 12,364 |
| | Percent of Total | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Commercial | Dollar total | 48,252 | 69,881 | 82,261 | 96,867 | 96,192 | 100,480 | 102,967 | 104,479 |
| | Percent of Total | 5 | 7 | 8 | 9 | 9 | 9 | 10 | 10 |
| Residential | Dollar total | 103,324 | 109,992 | 123,971 | 143,329 | 146,672 | 170,925 | 185,992 | 197,071 |
| | Percent of Total | 10 | 10 | 12 | 14 | 14 | 16 | 18 | 19 |
| Developmental | Dollar total | 547,000 | 640,650 | 698,900 | 762,550 | 561,100 | 590,287 | 661,200 | 813,338 |
| | Percent of Total | - | - | - | - | - | - | - | - |
| Utility | Dollar total | 189,246 | 69,446 | 102,554 | 82,259 | 91,483 | 100,835 | 73,067 | 96,222 |
| | Percent of Total | 18 | 7 | 10 | 8 | 9 | 10 | 7 | 9 |
| Total Ad valorem | | 1,057,272 | 1,071,824 | 1,149,727 | 1,170,383 | 1,189,633 | 1,222,330 | 1,139,907 | 1,165,360 |

## Table 2.5-35 Taxable Value of Property in Frenchtown Township (in thousands of dollars) (Sheet 2 of 2)

| | | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|
| Industrial | Dollar total | 775,929 | 784,316 | 779,260 | 810,131 | 795,857 | 727,976 | 659,469 |
| | Percent of Total | 73 | 74 | 74 | 77 | 75 | 69 | 62 |
| Agricultural | Dollar total | 12,411 | 12,644 | 12,720 | 12,357 | 11,224 | 11,390 | 11,719 |
| | Percent of Total | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Commercial | Dollar total | 101,481 | 104,367 | 112,199 | 116,489 | 123,456 | 137,704 | 149,677 |
| | Percent of Total | 10 | 10 | 11 | 11 | 12 | 13 | 14 |
| Residential | Dollar total | 211,334 | 221,295 | 238,454 | 257,494 | 279,994 | 304,702 | 327,777 |
| | Percent of Total | 20 | 21 | 23 | 24 | 26 | 29 | 31 |
| Developmental | Dollar total | 704,706 | 878,225 | 0 | 0 | 0 | 0 | 0 |
| | Percent of Total | - | - | - | - | - | - | - |
| Utility | Dollar total | 81,338 | 87,772 | 74,682 | 75,802 | 54,947 | 69,832 | 72,132 |
| | Percent of Total | 8 | 8 | 7 | 7 | 5 | 7 | 7 |
| Total Advalorem | | 1,183,197 | 1,211,272 | 1,217,315 | 1,272,274 | 1,265,479 | 1,251,603 | 1,220,774 |

Notes:

1. Values in the Developmental Category include property ready for development but for which no clear category had been established. This category was dropped by the assessor's office in 1998. After that time such property was assigned to other use categories.
2. Utility Values Represent personal property tax only—real property value included in industrial table.
3. Properties eligible for Tax abatement under act 198 I.F.T (Industrial Facilities Tax), and Act 342 (Commercial Facilities Tax) have been included at 50% of actual taxable value to accurately reflect their tax generation.

Source: Reference 2.5-11

## Table 2.5-36 Per Capita Michigan State Taxes and U.S. Rank (2004)

| | Per Capita | | | | Per $1,000 Personal Income | | | |
|---|---|---|---|---|---|---|---|---|
| | Michigan | | Ohio | | Michigan | | Ohio | |
| Tax | Value ($) | Rank | Value($) | Rank | Value ($) | Rank | Value ($) | Rank |
| Total Taxes | 3,313 | 25 | 3419 | 21 | 103.28 | 21 | 109.73 | 10 |
| Property Taxes | 1,186 | 16 | 981 | 26 | 39.96 | 15 | 31.48 | 24 |
| General Sales Taxes | 781 | 27 | 809 | 23 | 24.36 | 29 | 25.95 | 23 |
| Selective Sales Taxes | 314 | 39 | 267 | 47 | 9.78 | 41 | 8.58 | 48 |
| Individual Income Taxes | 630 | 32 | 1064 | 8 | 19.63 | 36 | 34.15 | 5 |
| Corporate Income Taxes | 182 | 9 | 93 | 22 | 5.68 | 6 | 2.97 | 21 |
| Motor Fuel Taxes | 107 | 43 | 135 | 23 | 3.34 | 42 | 4.34 | 21 |
| Tobacco Product Taxes | 99 | 2 | 49 | 22 | 3.08 | 2 | 1.57 | 22 |

Source: Reference 2.5-84

## Table 2.5-37 Michigan General Property Tax Collection (2004 and 2005)

| | 2004 Levy | | 2005 Levy | |
|---|---|---|---|---|
| **Jurisdiction** | **Amount ($)** | **Percent of Total** | **Amount ($)** | **Percent of Total** |
| School | 5,440,921,510 | 52.47 | 5,710,027,883 | 52.36 |
| City | 2,178,716,784 | 21.01 | 2,294,324,115 | 21.04 |
| County | 1,918,051,074 | 18.50 | 2,017,064,502 | 18.5 |
| Township | 743,252,490 | 7.17 | 793,380,177 | 7.27 |
| Village | 88,174,916 | 0.85 | 91,050,743 | 0.83 |
| Total Levy | 10,369,116,774 | 100.00 | 10,905,847,420 | 100.00 |

Source: Reference 2.5-85

## Table 2.5-38 Treasury Administered Taxes and Fee Collected on a Cash Basis(In Thousands of Dollars)

| Type of Revenue | 10/1/01 to 9/30/02 | 10/1/02 to 9/30/03 | 10/1/03 to 9/30/04 | 10/1/04 to 9/30/05 | 10/1/05 to 9/30/06 |
|---|---|---|---|---|---|
| Net Individual Income Tax | 6,260,348 | 5,845,697 | 5,912,261 | 6,038,578 | 6,242,883 |
| Industrial/Commercial Facilities Tax | 149,889 | 156,406 | 154,267 | 141,384 | 136,783 |
| Sales Tax | 6,492,547 | 6,408,508 | 6,457,613 | 6,609,944 | 6,589,230 |
| State Education Tax | 1,578,743 | 1,776,174 | 1,542,252 | 1,794,026 | 1,900,206 |
| State Housing Development Service Fee | 7,911 | 8,409 | 9,092 | 7,060 | 9,001 |
| Environmental Protection Regulatory Fee (e) | 60,929 | 58,459 | 58,422 | 59,167 | 55,784 |
| Use Tax | 1,315,629 | 1,236,133 | 1,317,494 | 1,396,395 | 1,391,289 |
| Utility Property Tax | 140,841 | 133,276 | 114,702 | 99,535 | 91,660 |
| | | | | | |
| Total of all Revenues | 20,617,594 | 20,413,332 | 20,389,235 | 21,267,440 | 21,530,516 |

Source: Reference 2.5-85

## Table 2.5-39 Regional Housing Information (2000) (Sheet 1 of 2)

| | | Occupied Housing | | | Vacant Housing | |
|---|---|---|---|---|---|---|
| County | Total Housing Units | Total Occupied Units / Dwellings | Owner Occupied Units / Dwellings | Renter Occupied Units / Dwellings | Total Vacant Units | Seasonal, Recreational, Occasional Use |
| Monroe County, MI | 56,471 | 53,772 | 43,536 | 10,236 | 2,699 | 364 |
| Wayne County, MI | 826,145 | 768,440 | 511,837 | 256,603 | 57,705 | 2,448 |
| Jackson County, MI | 62,906 | 58,168 | 44,503 | 13,665 | 4,738 | 1,887 |
| Lenawee County, MI | 39,769 | 35,930 | 28,102 | 7,828 | 3,839 | 1,911 |
| Livingston County, MI | 58,919 | 55,384 | 48,757 | 6,627 | 3,535 | 1,553 |
| Macomb County, MI | 320,276 | 309,203 | 243,964 | 65,239 | 11,073 | 1,122 |
| Oakland County, MI | 492,006 | 471,115 | 352,125 | 118,990 | 20,891 | 3,778 |
| St. Clair County, MI | 67,107 | 62,072 | 49,419 | 12,653 | 5,035 | 1,921 |
| Washtenaw County, MI | 131,069 | 125,327 | 74,830 | 50,497 | 5,742 | 1,114 |
| Erie County, OH | 35,909 | 31,727 | 22,847 | 8,880 | 4,182 | 2,172 |
| Fulton County, OH | 16,232 | 15,480 | 12,392 | 3,088 | 752 | 83 |
| Henry County, OH | 11,622 | 10,935 | 8,806 | 2,129 | 687 | 62 |
| Lucas County, OH | 196,259 | 182,847 | 119,492 | 63,355 | 13,412 | 613 |
| Ottawa County, OH | 25,532 | 16,474 | 13,285 | 3,189 | 9,058 | 7,836 |
| Sandusky County, OH | 25,253 | 23,717 | 17,852 | 5,865 | 1,536 | 282 |
| Seneca County, OH | 23,692 | 22,292 | 16,751 | 5,541 | 1,400 | 87 |
| Wood County, OH | 47,468 | 45,172 | 31,953 | 13,219 | 2,296 | 206 |
| Essex, Ontario | NA | 141,300 | 103,125 | 38,170 | NA | NA |
| Chatham-Kent, Ontario | NA | 42,085 | 30,370 | 11700 | NA | NA |
| Lambton, Ontario | NA | 50,165 | 37,775 | 12,255 | NA | NA |
| **Total Region** | **2,436,635** | **2,288,055** | **1,640,451** | **647,604** | **148,580** | **27,439** |
| **State** | | | | | | |
| Michigan | 4,234,279 | 3,785,661 | 2,793,124 | 992,537 | 448,618 | 233,922 |
| Ohio | 4,783,051 | 4,445,773 | 3,072,522 | 1,373,251 | 337,278 | 47,239 |
| Canadian Units in Region/Province | | 233,550 | 171,270 | 62,125 | | |

## Table 2.5-39 Regional Housing Information (2000) (Sheet 2 of 2)

| | | Occupied Housing | | | Vacant Housing | |
|---|---|---|---|---|---|---|
| County | Total Housing Units | Total Occupied Units / Dwellings | Owner Occupied Units / Dwellings | Renter Occupied Units / Dwellings | Total Vacant Units | Seasonal, Recreational, Occasional Use |
| Ontario, Canada | NA | 4,219,415 | 2,862,300 | 1,351,365 | NA | NA |

Source: Reference 2.5-65, Reference 2.5-75, Reference 2.5-76, and Reference 2.5-77

## Table 2.5-40 Regional Occupied Housing Stability Characteristics (2000)*

| Year Moved In | Units | Percent |
|---|---|---|
| 1999 - 2000 | 340,899 | 17.37 |
| 1995 - 1998 | 545,843 | 27.82 |
| 1990 - 1994 | 313,243 | 15.96 |
| 1980 – 1989 | 311,690 | 15.88 |
| 1970 – 1979 | 215,220 | 10.97 |
| 1969 or earlier | 235,326 | 11.99 |
| Occupied Housing Units | 1,962,221 | |

* Methodology: CBG estimating approach (see Subsection 2.5.1)

Source: Reference 2.5-65

**Table 2.5-41 Change in Monroe, Wayne, and Lucas County Housing Characteristics (2000 to 2006)**

| | Monroe County 2000 | Monroe County 2006 | Percent Change | Wayne County 2000 | Wayne County 2006 | Percent Change | Lucas County 2000 | Lucas County 2006 | Percent Change |
|---|---|---|---|---|---|---|---|---|---|
| Total Housing Units | 56,471 | 63,061 | 12 | 826,145 | 842,440 | 2 | 196,259 | 202,849 | 3 |
| Occupied | 53,772 | 58,376 | 9 | 768,440 | 718,160 | -7 | 182,847 | 179,911 | -2 |
| Owner | 43,536 | 47,420 | 9 | 511,837 | 492,485 | -4 | 108,339 | 117,528 | 8 |
| Renter | 10,236 | 10,956 | 7 | 256,603 | 225,675 | -12 | 63,152 | 62,383 | -1 |
| Vacant | 2,699 | 4,685 | 74 | 57,705 | 124,280 | 115 | 13,412 | 22,938 | 71 |
| Monthly Owner Costs (Median Dollars) | | | | | | | | | |
| Mortgaged | 1,012 | 1,368 | 35 | 942 | 1,359 | 44 | 900 | 1,215 | 35 |
| Non-Mortgaged | 291 | 430 | 48 | 308 | 465 | 51 | 294 | 459 | 56 |
| Renter Costs (Median Dollars) | 549 | 695 | 27 | 530 | 719 | 36 | 484 | 594 | 23 |

Source: Reference 2.5-86 through Reference 2.5-93

## Table 2.5-42 Adequacy of Structures in Regional Areas (2000)

| | Occupied Housing Units | Lacking Complete Plumbing Facilities | | Lacking Complete Kitchen Facilities | | No Telephone Service | | Greater than 1 Occupant per Room | |
|---|---|---|---|---|---|---|---|---|---|
| | | Housing Units | % | Housing Units | % | Housing Units | % | Housing Units | % |
| Michigan | 3,785,661 | 16,971 | 0.45 | 17,844 | 0.47 | 99,747 | 2.63 | 113,944 | 3.01 |
| Ohio | 4,445,773 | 19,407 | 0.44 | 23,805 | 0.54 | 97,917 | 2.20 | 73,499 | 1.65 |
| Monroe County, MI | 53,772 | 170 | 0.32 | 161 | 0.30 | 1,116 | 2.08 | 1,001 | 1.86 |
| Wayne County, MI | 768,440 | 5404 | 0.70 | 5,509 | 0.72 | 32,158 | 4.18 | 38,522 | 5.01 |
| Jackson County, MI | 58,168 | 193 | 0.33 | 291 | 0.50 | 1,684 | 2.90 | 1,214 | 2.09 |
| Lenawee County, MI | 35,930 | 146 | 0.41 | 131 | 0.36 | 909 | 2.53 | 672 | 1.87 |
| Livingston County, MI | 55,384 | 129 | 0.23 | 150 | 0.27 | 645 | 1.16 | 832 | 1.50 |
| Macomb County, MI | 309,203 | 753 | 0.24 | 711 | 0.23 | 4,166 | 1.35 | 7,585 | 2.45 |
| Oakland County, MI | 471,115 | 1356 | 0.29 | 1,614 | 0.34 | 5,949 | 1.26 | 11,886 | 2.52 |
| St. Clair County, MI | 62,072 | 165 | 0.27 | 244 | 0.39 | 1,527 | 2.46 | 1,035 | 1.67 |
| Washtenaw County, MI | 125,327 | 483 | 0.39 | 545 | 0.43 | 1,617 | 1.29 | 3,956 | 3.16 |
| Erie County, OH | 31,727 | 120 | 0.38 | 65 | 0.20 | 469 | 1.48 | 372 | 1.17 |
| Fulton County, OH | 15,480 | 57 | 0.37 | 42 | 0.27 | 255 | 1.65 | 219 | 1.41 |
| Henry County, OH | 10,935 | 34 | 0.31 | 28 | 0.26 | 311 | 2.84 | 169 | 1.55 |
| Lucas County, OH | 182,847 | 688 | 0.38 | 712 | 0.39 | 3,722 | 2.04 | 3,392 | 1.86 |
| Ottawa County, OH | 16,474 | 58 | 0.35 | 35 | 0.21 | 285 | 1.73 | 222 | 1.35 |
| Sandusky County, OH | 23,717 | 31 | 0.13 | 184 | 0.78 | 370 | 1.56 | 355 | 1.50 |
| Seneca County, OH | 22,292 | 113 | 0.51 | 210 | 0.94 | 606 | 2.72 | 297 | 1.33 |
| Wood County, OH | 45,172 | 90 | 0.20 | 217 | 0.48 | 554 | 1.23 | 616 | 1.36 |
| Total | 2,288,055 | 9,990 | 0.44 | 10,849 | 0.47 | 56,343 | 2.46 | 72,345 | 3.16 |

Source: Reference 2.5-65

## Table 2.5-42-A Housing Information for the Fermi 3 Region Counties (Sheet 1 of 4)

| MICHIGAN REGION COUNTIES | Monroe | Wayne | Oakland | Livingston | Macomb |
|---|---|---|---|---|---|
| | 2007 | 2007 | 2007 | 2007 | 2007 |
| Total housing units | 63,421 | 839,201 | 524,762 | 72,458 | 352,987 |
| Occupied units | 57,333 | 706,198 | 480,262 | 67,027 | 327,470 |
| Vacant units | 6,088 | 133,003 | 44,500 | 5,431 | 25,517 |
| Owner occupied units | 46,343 | 483,232 | 367,412 | 57,418 | 260,960 |
| Renter occupied units | 10,899 | 222,966 | 112,850 | 9,609 | 66,510 |
| Year moved in, percent | | | | | |
| 2005 or later | 25.3 | 24.5 | 25 | 23 | 23.6 |
| 2000-2004 | 24.8 | 22.5 | 25.2 | 28.7 | 26.8 |
| 1990-1999 | 25 | 22.4 | 25.4 | 28.5 | 25.3 |
| 1980-1989 | 9.7 | 11.6 | 12 | 9 | 10.4 |
| 1970-1979 | 7.7 | 9.6 | 7.1 | 7.8 | 6.8 |
| 1969 or earlier | 7.5 | 9.4 | 5.3 | 3 | 7.1 |
| Monthly Owner Costs (median) | | | | | |
| Mortgaged | $1,455 | $1,369 | $1,750 | $1,716 | $1,448 |
| Non-mortgaged | $430 | $466 | $573 | $495 | $464 |
| Renter costs | $678 | $719 | $829 | $860 | $702 |
| Percent w/o complete plumbing | 0.2 | 0.5 | 0.2 | 0.1 | 0.2 |
| Percent w/o complete kitchen | 0.2 | 0.5 | 0.3 | 0.0 | 0.3 |
| Percent w/o telephone service | 10.3 | 7.3 | 4.1 | 4.1 | 6.4 |
| Percent with > 1 occupant / room | 0.7 | 2.2 | 1.4 | 0.6 | 1.1 |

## Table 2.5-42-A Housing Information for the Fermi 3 Region Counties (Sheet 2 of 4)

| MICHIGAN REGION COUNTIES | Washtenaw | Jackson | Lenawee | St. Clair |
|---|---|---|---|---|
| | 2007 | 2007 | 2007 | 2007 |
| Total housing units | 147,047 | 67,964 | 42,932 | 73,260 |
| Occupied units | 133,075 | 60,965 | 38,000 | 65,343 |
| Vacant units | 13,972 | 6,999 | 4,932 | 7,917 |
| Owner occupied units | 87,094 | 44,960 | 32,146 | 50,652 |
| Renter occupied units | 45,981 | 16,005 | 5,854 | 14,691 |
| Year moved in, percent | | | | |
| 2005 or later | 35.6 | 26.6 | 21.6 | 24.9 |
| 2000-2004 | 26.4 | 21.9 | 24.1 | 27.4 |
| 1990-1999 | 21.3 | 25 | 24.5 | 22.2 |
| 1980-1989 | 7.7 | 11.7 | 13.3 | 12.2 |
| 1970-1979 | 4.8 | 6.5 | 7.4 | 8.0 |
| 1969 or earlier | 4.2 | 8.3 | 9.2 | 5.3 |
| Monthly Owner Costs (median) | | | | |
| Mortgaged | $1,817 | $1,217 | $1,217 | $1,309 |
| Non-mortgaged | $579 | $370 | $387 | $433 |
| Renter costs | $827 | $664 | $610 | $657 |
| Percent w/o complete plumbing | 0.4 | 0.6 | 0.3 | 0.0 |
| Percent w/o complete kitchen | 0.5 | 0.5 | 1.1 | 0.4 |
| Percent w/o telephone service | 7.2 | 4.9 | 7.1 | 9.4 |
| Percent with > 1 occupant / room | 1.4 | 1.2 | 0.7 | 1.5 |

## Table 2.5-42-A Housing Information for the Fermi 3 Region Counties (Sheet 3 of 4)

| OHIO REGION COUNTIES | Wood | Lucas | Fulton | Ottawa |
|---|---|---|---|---|
| | 2007 | 2007 | 2005-2007 | 2005-2007 |
| Total housing units | 51,950 | 203,251 | 17,162 | 26,897 |
| Occupied units | 48,917 | 178,773 | 15,841 | 18,125 |
| Vacant units | 3,033 | 24,478 | 1,321 | 8,772 |
| Owner occupied units | 34,143 | 119,621 | 12,938 | 14,001 |
| Renter occupied units | 14,774 | 59,152 | 2,903 | 4,124 |
| Year moved in | | | | |
| 2005 or later | 31 | 28.7 | 16.1 | 14.8 |
| 2000 to 2004 | 24.2 | 24 | 27.1 | 30.1 |
| 1990-1999 | 21 | 21.3 | 26.3 | 23.3 |
| 1980-1989 | 10.8 | 11.9 | 11.8 | 13.9 |
| 1970-1979 | 6.5 | 7.0 | 9.3 | 9.7 |
| 1969 or earlier | 6.7 | 7.2 | 9.5 | 8.3 |
| Monthly Owner Costs (median) | | | | |
| Mortgaged | $1,340 | $1,225 | $1,220 | $1,259 |
| Non-mortgaged | $429 | $452 | $411 | $410 |
| Renter costs | $616 | $610 | $615 | $662 |
| Percent w/o complete plumbing | 0.2 | 0.2 | 0.0 | 0.3 |
| Percent w/o complete kitchen | 0.5 | 0.6 | 0.1 | 0.3 |
| Percent w/o telephone service | 7.3 | 4.6 | 4.3 | 6.2 |
| Percent with > 1 occupant / room | 1.2 | 0.9 | 1.8 | 0.1 |

## Table 2.5-42-A Housing Information for the Fermi 3 Region Counties (Sheet 4 of 4)

| OHIO REGION COUNTIES | Henry | Sandusky | Seneca | Erie |
|---|---|---|---|---|
| | 2005-2007 | 2005-2007 | 2005-2007 | 2005-2007 |
| Total housing units | 12,031 | 26,070 | 24,354 | 37,334 |
| Occupied units | 11,172 | 23,915 | 22,311 | 31,874 |
| Vacant units | 859 | 2,155 | 2,043 | 5,460 |
| Owner occupied units | 9,209 | 17,819 | 17,141 | 23,385 |
| Renter occupied units | 1,963 | 6,096 | 5,170 | 8,489 |
| Year moved in, percent | | | | |
| 2005 or later | 15.4 | 14.2 | 14.7 | 16 |
| 2000 to 2004 | 26.4 | 30.5 | 23 | 28.2 |
| 1990-1999 | 22.3 | 24.4 | 25.6 | 25.1 |
| 1980-1989 | 13.9 | 12.6 | 14.3 | 11.3 |
| 1970-1979 | 10.2 | 8.6 | 10.8 | 9.2 |
| 1969 or earlier | 11.8 | 9.6 | 11.6 | 10.1 |
| Monthly Owner Costs (median) | | | | |
| Mortgaged | $1,049 | $1,069 | $974 | $1,252 |
| Non-mortgaged | $390 | $377 | $332 | $423 |
| Renter costs | $618 | $525 | $505 | $626 |
| Percent w/o complete plumbing | 0.2 | 0.1 | 0.4 | 0.1 |
| Percent w/o complete kitchen | 0.5 | 0.8 | 0.5 | 0.2 |
| Percent w/o telephone service | 3.8 | 3.5 | 4.8 | 4.5 |
| Percent with > 1 occupant / room | 1.0 | 1.2 | 0.9 | 1.0 |

Sources: U.S. Census Bureau American FactFinder, Selected Housing Characteristics: 2007, Data Set: 2007 American Community Survey 1-Year Estimates, and Selected Housing Characteristics: 2005-2007, Data Set 2005-2007 American Community Survey 3-Year Estimates

## Table 2.5-42-B Forecast of Occupied Housing Units (also Number of Households) by County, Southeast Michigan, 1990-2035

| | Historical | | Forecast Period | | | | |
|---|---|---|---|---|---|---|---|
| **County** | **1990** | **2000** | **2010** | **2020** | **2030** | **2035** | **Avg. Annual Growth Rate, Forecast Period** |
| **Livingston** | 38,887 | 55,382 | 71,662 | 75,478 | 80,870 | 82,789 | 0.58% |
| **Macomb** | 264,991 | 309,203 | 345,922 | 359,554 | 380,124 | 390,916 | 0.49% |
| **Monroe** | 46,508 | 53,772 | 60,772 | 63,307 | 67,709 | 69,388 | 0.53% |
| **Oakland** | 410,448 | 471,115 | 503,230 | 521,504 | 555,775 | 573,433 | 0.52% |
| **St. Clair** | 52,882 | 62,072 | 67,702 | 71,536 | 76,787 | 78,485 | 0.59% |
| **Washtenaw** | 104,527 | 125,232 | 140,386 | 144,705 | 151,819 | 157,411 | 0.46% |
| **Wayne** | 780,535 | 768,440 | 740,284 | 717,116 | 738,524 | 747,632 | 0.04% |
| **Region** | 1,698,818 | 1,845,218 | 1,929,959 | 1,953,201 | 2,051,607 | 2,100,055 | 0.34% |

Source: *2035 Forecast for Southeast Michigan*, April 2008, SEMCOG, Table 2. Household Change by County, Southeast Michigan, 1990-2035, p. 14

## Table 2.5-42-C Mobile Home Parks in Monroe County, 2006 (Sheet 1 of 2)

| Name | 2001 | 2004 | 2006 |
|---|---|---|---|
| Americana Mobile Home Park | 122 | 122 | 122 |
| Bennett Mobile Home Park | 28 | 28 | 28 |
| Carleton Mobile Home Park | 228 | 228 | 228 |
| Hometown Country Heritage Mobile Home Park | 213 | 213 | 213 |
| Dundee Meadows Mobile Home Park | 80 | 80 | 80 |
| Elizabeth Woods Mobile Home Park | 369 | 369 | 369 |
| Erie Mobile Home Park | 20 | 20 | 20 |
| Flat Rock Village Mobile Home Park | 332 | 332 | 332 |
| Frenchtown Villa Mobile Home Park | 692 | 692 | 692 |
| Hidden Creek Mobile Home Park | 351 | 351 | 351 |
| Holiday South Mobile Home Park | 152 | 152 | 152 |
| Inverness Mobile Home Park | 518 | 518 | 518 |
| Kimberly Estates Mobile Home Park | 388 | 387 | 388 |
| Meadowbrook Estates Mobile Home Park | 455 | 453 | 455 |
| Mill Race Shores Mobile Home Park | 97 | 97 | 97 |
| Monroe Gardens Mobile Home Park | 29 | 29 | 29 |
| Newport Farms Mobile Home Park | 513 | 513 | 513 |
| North Towne Meadows Mobile Home Park | 386 | 386 | 386 |
| Oakridge Estates Mobile Home Park | 620 | 621 | 620 |
| Oakwood Mobile Home Park | 67 | 65 | 65 |
| Pleasantville Mobile Home Park | 152 | 152 | 152 |

## Table 2.5-42-C Mobile Home Parks in Monroe County, 2006 (Sheet 2 of 2)

| Name | 2001 | 2004 | 2006 |
|---|---|---|---|
| Raisin Ridge Mobile Home Park | 262 | 307 | 319 |
| Shamrock Village Mobile Home Park | 76 | 76 | 76 |
| South Huron River Mobile Home Park | 48 | 48 | 48 |
| Sunny South Villa Mobile Home Park | 68 | 68 | 68 |
| The Orchards Mobile Home Park | 200 | 393 | 394 |
| Tiny Village Mobile Home Park | 22 | 22 | 22 |
| Willow Green Mobile Home Park | 434 | 429 | 434 |
| Yorkshire Manor Mobile Home Park | 280 | 280 | 280 |
| **Total** | **7,209** | **7,431** | **7,451** |

Source: *2006, Annual Building Activities Report*, Monroe County Planning Department, Table 6.2 Authorized Manufactured Housing Communities, 2001-2006, p. 44

## Table 2.5-42-D Mobile Home Parks and Sites in Southeast Michigan, 2000-2006

| Area | No. of Manufactured Housing Parks | | No. of Sites in Manufactured Housing Parks | | Percent Change |
|---|---|---|---|---|---|
| | 2000 | 2006 | 2000 | 2006 | 2000-2006 |
| **Livingston County** | 22 | 23 | 3,273 | 4,363 | 33.3 |
| **Macomb County** | 42 | 43 | 15,020 | 15,709 | 4.6 |
| **Monroe County** | 29 | 29 | 6,568 | 7,451 | 13.4 |
| **Oakland County** | 64 | 63 | 18,536 | 18,395 | -0.8 |
| **St. Clair County** | 32 | 32 | 5,829 | 5,989 | 2.7 |
| **Washtenaw County** | 25 | 27 | 5,683 | 6,779 | 19.3 |
| **Wayne County** | 67 | 68 | 15,077 | 15,835 | 5.0 |
| **Southeast Michigan** | 281 | 285 | 69,986 | 74,521 | 6.5 |

SEMCOG, the Southeast Michigan Council of Governments, *Manufactured Housing Parks and Sites in Southeast Michigan, 2000-2006*, December 2006, page 3.

## Table 2.5-42-E Twenty-Year History of Building Permit Activity in Southeast Michigan

| Year | Total New Units | Units Demolished | Net Total Units |
|---|---|---|---|
| 1989 | 21,567 | 6,980 | 14,587 |
| 1990 | 17,648 | 5,831 | 11,817 |
| 1991 | 14,838 | 4,910 | 9,928 |
| 1992 | 16,707 | 4,420 | 12,287 |
| 1993 | 17,289 | 4,219 | 13,070 |
| 1994 | 21,027 | 3,518 | 17,509 |
| 1995 | 20,976 | 7,182 | 13,794 |
| 1996 | 23,441 | 9,556 | 13,885 |
| 1997 | 22,112 | 5,988 | 16,124 |
| 1998 | 25,888 | 5,606 | 20,282 |
| 1999 | 22,951 | 6,224 | 16,727 |
| 2000 | 21,236 | 5,692 | 15,544 |
| 2001 | 19,620 | 6,009 | 13,611 |
| 2002 | 21,359 | 3,705 | 17,654 |
| 2003 | 23,273 | 2,579 | 20,694 |
| 2004 | 25,151 | 4,058 | 21,093 |
| 2005 | 18,400 | 3,434 | 14,966 |
| 2006 | 10,158 | 2,781 | 7,377 |
| 2007 | 5,235 | 2,573 | 2,662 |
| 2008 | 3,074 | 4,154 | -1,080 |

SEMCOG, the Southeast Michigan Council of Governments, *Residential Construction in Southeast Michigan, 2008*, April 2009, Table 5. 20-Year History of Building Permit Activity in Southeast Michigan, page 4

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 1 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Lotus Bed & Breakfast, The | Monroe | 0 | Bed and Breakfast |
| Camp Lord Willing Management RV Park & Campground | Monroe | 0 | Campgrounds |
| Harbortown RV Park | Monroe | 0 | Campgrounds |
| Monroe County Fairgrounds | Monroe | 0 | Campgrounds |
| Wm. C. Sterling State Park | Monroe | 0 | Campgrounds |
| America's Best Value Inn & Suites | Monroe | 0 | Hotel/Motel |
| Baymont Inn & Suites - Monroe | Monroe | 0 | Hotel/Motel |
| Best Western Prestige Inn - Monroe | Monroe | 0 | Hotel/Motel |
| Comfort Inn of Monroe | Monroe | 0 | Hotel/Motel |
| Hampton Inn - Monroe | Monroe | 0 | Hotel/Motel |
| Holiday Inn Express Hotel & Suites - Monroe | Monroe | 0 | Hotel/Motel |
| Hotel Sterling | Monroe | 0 | Hotel/Motel |
| Knights Inn - Monroe | Monroe | 0 | Hotel/Motel |
| Motel 7 - Monroe | Monroe | 0 | Hotel/Motel |
| Sunset Motel | Monroe | 0 | Hotel/Motel |
| Travel Inn - Monroe | Monroe | 0 | Hotel/Motel |
| Island House Resorts at Lake Erie, Luna Pier | Luna Pier | 6 | Cabins and Cottages |
| Bedford Inn | Erie | 8 | Hotel/Motel |
| The Vine Camp & Lodge | Temperance | 11 | Cabins/ Campgrounds |
| Wilderness Campground | Dundee | 13 | Cabins/ Campgrounds |
| Country Inns & Suites-Dundee | Dundee | 13 | Hotel/Motel |
| Days Inn & Suites | Dundee | 13 | Hotel/Motel |
| Holiday Inn Express & Suites/Splash Universe Water Park Resorts | Dundee | 13 | Hotel/Motel |
| Quality Inn - Dundee | Dundee | 13 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 2 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Monroe County KOA Kampground | Petersburg | 15 | Cabins/Campgrounds |
| Pirolli Park Campground | Petersburg | 15 | Campgrounds |
| Totem Pole Park | Petersburg | 15 | Campgrounds |
| Hampton Inn & Suites | Toledo (OH) | 16 | Hotel/Motel |
| Fairfield Inn & Suites - Toledo/North by Marriott | Toledo (OH) | 17 | Hotel/Motel |
| Covered Wagon Camp Resort | Ottawa Lake | 18 | Cabins/ Campgrounds |
| Comfort Inn - North | Toledo (OH) | 18 | Hotel/Motel |
| KC Campground | Milan | 19 | Campgrounds |
| Wayne County Fairgrounds | Belleville | 19 | Campgrounds |
| Comfort Inn - Belleville | Belleville | 19 | Hotel/Motel |
| Hampton Inn - Belleville | Belleville | 19 | Hotel/Motel |
| Holiday Inn Express Hotel and Suites - Belleville | Belleville | 19 | Hotel/Motel |
| Sleep Inn - Flat Rock | Flat Rock | 19 | Hotel/Motel |
| Sleep Inn - Milan | Milan | 19 | Hotel/Motel |
| Star Motel | Milan | 19 | Hotel/Motel |
| Super 8 - Belleville | Belleville | 19 | Hotel/Motel |
| The Pet Resort, Inc. | Belleville | 19 | Hotel/Motel |
| The Casey-Pomeroy House | Toledo (OH) | 21 | Bed and Breakfast |
| Best Western Woodhaven Inn | Woodhaven | 22 | Hotel/Motel |
| Holiday Inn Express Hotel and Suites - Woodhaven | Woodhaven | 22 | Hotel/Motel |
| Crowne Plaza Toledo | Toledo (OH) | 22 | Hotel/Motel |
| Park Inn Toledo | Toledo (OH) | 22 | Hotel/Motel |
| Americas Best Value Inn & Suites-Detroit Airport | Romulus | 23 | Hotel/Motel |
| Baymont Inn & Suites - Romulus | Romulus | 23 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 3 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Best Western Gateway International | Romulus | 23 | Hotel/Motel |
| Clarion Hotel - Detroit Metro Airport | Romulus | 23 | Hotel/Motel |
| Comfort Inn - Metro Detroit Airport | Romulus | 23 | Hotel/Motel |
| Courtyard by Marriott - Detroit Metro Airport | Romulus | 23 | Hotel/Motel |
| Crowne Plaza Hotel - Detroit Metro Airport | Romulus | 23 | Hotel/Motel |
| Days Inn - Detroit Metro Airport | Romulus | 23 | Hotel/Motel |
| Detroit Metro Airport Hilton Suites | Romulus | 23 | Hotel/Motel |
| Detroit Metro Airport Marriott | Romulus | 23 | Hotel/Motel |
| Fairfield Inn & Suites Detroit Metro Airport Romulus | Romulus | 23 | Hotel/Motel |
| Four Points by Sheraton Detroit Metro Airport | Romulus | 23 | Hotel/Motel |
| Hilton Garden Inn - Romulus | Romulus | 23 | Hotel/Motel |
| Howard Johnson Metro Airport | Romulus | 23 | Hotel/Motel |
| LaQuinta Inn - Romulus | Romulus | 23 | Hotel/Motel |
| Lexington Hotel - Metro Airport | Romulus | 23 | Hotel/Motel |
| Metro Inn--Detroit Metro Airport | Romulus | 23 | Hotel/Motel |
| Metropolitan Hotel - Detroit airport | Romulus | 23 | Hotel/Motel |
| Quality Inn & Suites | Romulus | 23 | Hotel/Motel |
| Ramada Inn - Metro Airport | Romulus | 23 | Hotel/Motel |
| Rodeway Inn | Romulus | 23 | Hotel/Motel |
| Super 8 - Romulus | Romulus | 23 | Hotel/Motel |
| Comfort Inn East | Oregon (OH) | 23 | Hotel/Motel |
| Holiday Inn Express/Oregon | Oregon (OH) | 23 | Hotel/Motel |
| Sleep Inn & Suites | Oregon (OH) | 23 | Hotel/Motel |
| B&B Railroad Depot Bed & Breakfast | Oregon (OH) | 23 | Bed and Breakfast |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 4 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Maumee Bay State Park | Oregon (OH) | 23 | Campground |
| Parish House Inn | Ypsilanti | 24 | Bed and Breakfast |
| The Queen's Residence | Ypsilanti | 24 | Bed and Breakfast |
| Detroit Greenfield RV Park | Ypsilanti | 24 | Campgrounds |
| Guyton Homestead | Ypsilanti | 24 | Condos and Rentals |
| Parish House Inn | Ypsilanti | 24 | Historic Inns |
| The Queen's Residence | Ypsilanti | 24 | Historic Inns |
| Ann Arbor Marriott Ypsilanti at Eagle Crest Resort | Ypsilanti | 24 | Hotel/Motel |
| Trenton Motor Inn | Trenton | 24 | Hotel/Motel |
| Mansion View Bed & Breakfast | Toledo (OH) | 24 | Bed and Breakfast |
| Comfort Inn Westgate | Toledo (OH) | 25 | Hotel/Motel |
| Ramada Hotel & Conference Center | Toledo (OH) | 25 | Hotel/Motel |
| Red Roof Inn - Toledo Westgate | Toledo (OH) | 25 | Hotel/Motel |
| Ambassador Motel | Taylor | 26 | Hotel/Motel |
| Comfort Inn & Suites of Taylor | Taylor | 26 | Hotel/Motel |
| Ramada Inn Downriver | Taylor | 26 | Hotel/Motel |
| Red Roof Inn - Taylor | Taylor | 26 | Hotel/Motel |
| Super 8 - Taylor | Taylor | 26 | Hotel/Motel |
| Bishop Brighton Bed and Breakfast | Wyandotte | 27 | Bed and Breakfast |
| Bishop Brighton Bed and Breakfast | Wyandotte | 27 | Historic Inns |
| Comfort Inn & Suites - Maumee | Maumee (OH) | 27 | Hotel/Motel |
| Days Inn Toledo-South | Toledo (OH) | 27 | Hotel/Motel |
| Grosse Ile Pilot House | Grosse Ile | 28 | Historic Inns |
| Almar Motel of Southgate | Southgate | 28 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 5 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Comfort Suites - Southgate | Southgate | 28 | Hotel/Motel |
| Days Inn - Canton | Canton | 28 | Hotel/Motel |
| Fairfield Inn - Canton | Canton | 28 | Hotel/Motel |
| Grosse Ile Pilot House | Grosse Ile | 28 | Hotel/Motel |
| Hampton Inn & Suites-Detroit/Canton | Canton | 28 | Hotel/Motel |
| Holiday Inn Express Hotel and Suites - Canton | Canton | 28 | Hotel/Motel |
| Holiday Inn Southgate - Detroit South | Southgate | 28 | Hotel/Motel |
| Hollywood Motel | Southgate | 28 | Hotel/Motel |
| La Quinta Inn - Canton | Canton | 28 | Hotel/Motel |
| Maplelawn Motel | Canton Township | 28 | Hotel/Motel |
| Motel 6 - Southgate | Southgate | 28 | Hotel/Motel |
| Super 8 - Canton | Canton | 28 | Hotel/Motel |
| Willow Acres | Canton | 28 | Hotel/Motel |
| Baymont Inn & Suites - Toledo/Northwood | Northwood (OH) | 28 | Hotel/Motel |
| Residence Inn By Marriott - Toledo/Maumee | Maumee (OH) | 28 | Hotel/Motel |
| Blissfield Bed and Breakfast | Blissfield | 29 | Bed and Breakfast |
| Hiram D. Ellis Inn | Blissfield | 29 | Bed and Breakfast |
| Blissfield Bed and Breakfast | Blissfield | 29 | Historic Inns |
| Hiram D. Ellis Inn | Blissfield | 29 | Historic Inns |
| Avon-Bungalow Motel | Inkster | 29 | Hotel/Motel |
| White House Inn Motel | Inkster | 29 | Hotel/Motel |
| Hilton Toledo | Toledo (OH) | 29 | Hotel/Motel |
| The Homestead Bed and Breakfast | Saline | 30 | Bed and Breakfast |
| The Homestead Bed and Breakfast | Saline | 30 | Historic Inns |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 6 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Allen Park Motor Lodge | Allen Park | 30 | Hotel/Motel |
| Best Western Greenfield Inn - Allen Park | Allen Park | 30 | Hotel/Motel |
| Holiday Inn Express and Suites at Greenfield Village | Allen Park | 30 | Hotel/Motel |
| Paradise Motel | Westland | 30 | Hotel/Motel |
| Heights Motel | Dearborn Heights | 31 | Hotel/Motel |
| Sleep Inn & Suites - Lincoln Park | Lincoln Park | 31 | Hotel/Motel |
| Maumee Bay Resort & Conference Center | Maumee (OH) | 31 | Hotel/Motel |
| 932 Penniman, A Bed and Breakfast | Plymouth | 32 | Bed and Breakfast |
| Ann Arbor Bed & Breakfast | Ann Arbor | 32 | Bed and Breakfast |
| Apple and Pear Street Bed & Breakfast | Ann Arbor | 32 | Bed and Breakfast |
| Burnt Toast Inn | Ann Arbor | 32 | Bed and Breakfast |
| Cadgwith Too Bed and Breakfast | Ann Arbor | 32 | Bed and Breakfast |
| Claire's Guesthouse | Ann Arbor | 32 | Bed and Breakfast |
| Davies House in Georgetown | Ann Arbor | 32 | Bed and Breakfast |
| First Street Garden Inn | Ann Arbor | 32 | Bed and Breakfast |
| Steller House B and B | Ann Arbor | 32 | Bed and Breakfast |
| The Eighth Street Trekkers' Lodge | Ann Arbor | 32 | Bed and Breakfast |
| The Library Bed & Breakfast | Ann Arbor | 32 | Bed and Breakfast |
| Vitosha Guest Haus | Ann Arbor | 32 | Bed and Breakfast |
| Bellanina Guest House | Ann Arbor | 32 | Condos and Rentals |
| Clinton Inn | Clinton | 32 | Historic Inns |
| First Street Garden Inn | Ann Arbor | 32 | Historic Inns |
| Steller House B and B | Ann Arbor | 32 | Historic Inns |
| The Dahlmann Campus Inn | Ann Arbor | 32 | Historic Inns |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 7 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Vitosha Guest Haus | Ann Arbor | 32 | Historic Inns |
| A Victory Inn & Suites | Ann Arbor | 32 | Hotel/Motel |
| Bell Tower Hotel | Ann Arbor | 32 | Hotel/Motel |
| Best Western Executive Plaza - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Candlewood Suites - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Comfort Inn Plymouth Clocktower | Plymouth | 32 | Hotel/Motel |
| Comfort Inn & Suites | Ann Arbor | 32 | Hotel/Motel |
| Comfort Inn and Suites - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Courtyard by Marriott - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Days Inn - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Embassy Hotel | Ann Arbor | 32 | Hotel/Motel |
| Extended Stay America | Ann Arbor | 32 | Hotel/Motel |
| Extended Stay Detroit/Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Fairfield Inn by Marriott Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Four Points by Sheraton Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Hampton Inn North - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Hampton Inn South - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Hawthorn Suites - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Hilton Garden Inn Plymouth | Plymouth | 32 | Hotel/Motel |
| Holiday Inn & Suites Ann Arbor-Boardwalk | Ann Arbor | 32 | Hotel/Motel |
| Holiday Inn Express Hotels & Suites - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Holiday Inn near the University of Michigan | Ann Arbor | 32 | Hotel/Motel |
| Kensington Court Hotel | Ann Arbor | 32 | Hotel/Motel |
| Lamp Post Inn | Ann Arbor | 32 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 8 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Microtel Inn & Suites - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Motel 6 - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Quality Inn & Suites-Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Red Roof Inn - Ann Arbor - University North | Ann Arbor | 32 | Hotel/Motel |
| Red Roof Inn - Plymouth | Plymouth | 32 | Hotel/Motel |
| Red Roof Inn- U of M - South - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| Residence Inn By Marriott - Ann Arbor | Ann Arbor | 32 | Hotel/Motel |
| The Dahlmann Campus Inn | Ann Arbor | 32 | Hotel/Motel |
| The Inn at Michigan League | Ann Arbor | 32 | Hotel/Motel |
| The Inn at St. John's | Plymouth | 32 | Hotel/Motel |
| Weber's Inn | Ann Arbor | 32 | Hotel/Motel |
| Country Inn & Suites- South | Rossford (OH) | 32 | Hotel/Motel |
| Hampton Inn & Suites - Toledo Perrysburg | Rossford (OH) | 32 | Hotel/Motel |
| Dearborn Bed & Breakfast | Dearborn | 33 | Bed and Breakfast |
| The Dearborn Inn, A Marriott Hotel | Dearborn | 33 | Historic Inns |
| A Victory Inn | Dearborn | 33 | Hotel/Motel |
| Americas Best Value Inn - Detroit/Dearborn | Dearborn | 33 | Hotel/Motel |
| Courtyard by Marriott - Dearborn | Dearborn | 33 | Hotel/Motel |
| Hampton Inn - Dearborn | Dearborn | 33 | Hotel/Motel |
| Hyatt Regency Dearborn | Dearborn | 33 | Hotel/Motel |
| Metro Inn - Dearborn | Dearborn | 33 | Hotel/Motel |
| Red Roof Inn - Dearborn | Dearborn | 33 | Hotel/Motel |
| The Dearborn Inn, A Marriott Hotel | Dearborn | 33 | Hotel/Motel |
| The Ritz-Carlton, Dearborn | Dearborn | 33 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 9 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| TownePlace Suites - Dearborn | Dearborn | 33 | Hotel/Motel |
| Village Inn of Dearborn | Dearborn | 33 | Hotel/Motel |
| Comfort Suites - Toledo/Perrysburg | Perrysburg (OH) | 33 | Hotel/Motel |
| Country Inn & Suites - Toledo/Maumee | Maumee (OH) | 33 | Hotel/Motel |
| Hilton Garden Inn - Toledo/Perrysburg | Perrysburg (OH) | 33 | Hotel/Motel |
| Holiday Inn Express | Perrysburg (OH) | 33 | Hotel/Motel |
| Holiday Inn French Quarter | Perrysburg (OH) | 33 | Hotel/Motel |
| Perrysburg Inn | Perrysburg (OH) | 33 | Hotel/Motel |
| Red Roof Inn - Maumee | Maumee (OH) | 33 | Hotel/Motel |
| Guesthouse Bed & Breakfast | Perrysburg (OH) | 33 | Bed and Breakfast |
| Stony Ridge KOA Kampground / East | Perrysburg (OH) | 33 | Campground |
| The Chicago Street Suite | Tecumseh | 34 | Bed and Breakfast |
| Rentalbug Vacation Rentals | Tecumseh | 34 | Cabins and Cottages |
| Indian Creek Camp & Conference Center | Tecumseh | 34 | Campgrounds |
| Best Western Laurel Park Suites - Livonia | Livonia | 34 | Hotel/Motel |
| Comfort Inn - Livonia | Livonia | 34 | Hotel/Motel |
| Courtyard by Marriott - Detroit/Livonia | Livonia | 34 | Hotel/Motel |
| Days Inn - Livonia | Livonia | 34 | Hotel/Motel |
| Detroit Marriott Livonia | Livonia | 34 | Hotel/Motel |
| Embassy Suites - Livonia | Livonia | 34 | Hotel/Motel |
| Fairfield Inn - Livonia | Livonia | 34 | Hotel/Motel |
| Hyatt Place Detroit/Livonia | Livonia | 34 | Hotel/Motel |
| Quality Inn and Suites - Livonia | Livonia | 34 | Hotel/Motel |
| Radisson Detroit-Livonia Hotel and Conference Center | Livonia | 34 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 10 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Residence Inn Detroit - Livonia | Livonia | 34 | Hotel/Motel |
| Royal Motor Inn | Livonia | 34 | Hotel/Motel |
| Super 8 - Livonia | Livonia | 34 | Hotel/Motel |
| Tecumseh Inn and Suites | Tecumseh | 34 | Hotel/Motel |
| TownePlace Suites by Marriott | Livonia | 34 | Hotel/Motel |
| Courtyard By Marriott - Holland | Holland (OH) | 34 | Hotel/Motel |
| Hawthorn Suites-Toledo/Holland | Holland (OH) | 34 | Hotel/Motel |
| Knights Inn - Toledo West | Maumee (OH) | 34 | Hotel/Motel |
| Quality Inn - Holland/Toledo Airport | Holland (OH) | 34 | Hotel/Motel |
| Red Roof Inn - Holland | Holland (OH) | 34 | Hotel/Motel |
| Extended Stay America | Holland (OH) | 35 | Hotel/Motel |
| Fairfield Inn - Toledo/Maumee | Maumee (OH) | 35 | Hotel/Motel |
| Fraser Inn, The | Northville | 36 | Bed and Breakfast |
| Fraser Inn, The | Northville | 36 | Historic Inns |
| Dorchester Motel | Redford | 36 | Hotel/Motel |
| Hampton Inn - Northville | Northville | 36 | Hotel/Motel |
| Holiday Inn Express - Northville | Northville | 36 | Hotel/Motel |
| Traveler's Motor Inn | Redford | 36 | Hotel/Motel |
| StudioPLUS - Maumee | Maumee (OH) | 36 | Hotel/Motel |
| Super 8 Motel | Maumee (OH) | 36 | Hotel/Motel |
| Econo Lodge - Toledo/Maumee | Maumee (OH) | 37 | Hotel/Motel |
| Hampton Inn - Toledo/Maumee | Maumee (OH) | 37 | Hotel/Motel |
| Comfort Inn- Southwest Toledo/Maumee | Maumee (OH) | 38 | Hotel/Motel |
| Days Inn - Maumee/Toledo | Maumee (OH) | 38 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 11 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Holiday Inn/ Toledo-Maumee | Maumee (OH) | 38 | Hotel/Motel |
| Motel 6 | Toledo (OH) | 38 | Hotel/Motel |
| Staybridge Suites - Maumee/Toledo | Maumee (OH) | 38 | Hotel/Motel |
| Oakwood Corporate Housing | Novi | 39 | Condos and Rentals |
| Country Inn & Suites - Novi | Novi | 39 | Hotel/Motel |
| Country Meadow Motel | South Lyon | 39 | Hotel/Motel |
| Courtyard by Marriott-Novi | Novi | 39 | Hotel/Motel |
| Crown Plaza - Novi | Novi | 39 | Hotel/Motel |
| Doubletree Hotel - Detroit/Novi | Novi | 39 | Hotel/Motel |
| Fairlane Motel | Novi | 39 | Hotel/Motel |
| Hotel Baronette | Novi | 39 | Hotel/Motel |
| Residence Inn Novi | Novi | 39 | Hotel/Motel |
| Sheraton Detroit Novi | Novi | 39 | Hotel/Motel |
| Staybridge Suites-Detroit/Novi | Novi | 39 | Hotel/Motel |
| Towne Place Suites - Novi | Novi | 39 | Hotel/Motel |
| Days Inn - Swanton/Toledo Airport | Swanton (OH) | 39 | Hotel/Motel |
| Homewood Suites Hotel | Maumee (OH) | 40 | Hotel/Motel |
| Briar Oaks Inn B & B | Adrian | 41 | Bed and Breakfast |
| Dobson House Bed & Breakfast | Detroit | 41 | Bed and Breakfast |
| Inn on Ferry Street | Detroit | 41 | Bed and Breakfast |
| Murray Hill Motel | Detroit | 41 | Bed and Breakfast |
| The Inn at 97 Winder | Detroit | 41 | Bed and Breakfast |
| The Woodbridge STAR | Detroit | 41 | Bed and Breakfast |
| Camp Sequoia | Adrian | 41 | Cabins and Cottages |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 12 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Camp Sequoia | Adrian | 41 | Campgrounds |
| Lake Hudson Recreation Area | Adrian | 41 | Campgrounds |
| Lenawee County Fair & Event Grounds | Adrian | 41 | Campgrounds |
| Downtown Living | Detroit | 41 | Condos and Rentals |
| Over the Rainbow | Whitmore Lake | 41 | Condos and Rentals |
| Inn on Ferry Street | Detroit | 41 | Historic Inns |
| Omni Detroit Hotel River Place | Detroit | 41 | Historic Inns |
| The Inn at 97 Winder | Detroit | 41 | Historic Inns |
| The Westin Book Cadillac Detroit | Detroit | 41 | Historic Inns |
| The Woodbridge STAR | Detroit | 41 | Historic Inns |
| A Victory Inn & Suites | Detroit | 41 | Hotel/Motel |
| Atheneum Suite Hotel and Conference Center | Detroit | 41 | Hotel/Motel |
| Best Western of Whitmore Lake | Whitmore Lake | 41 | Hotel/Motel |
| Carlton Lodge | Adrian | 41 | Hotel/Motel |
| Comfort Inn - Downtown Detroit | Detroit | 41 | Hotel/Motel |
| Corktown Inn | Detroit | 41 | Hotel/Motel |
| Courtyard by Marriott - Detroit Downtown | Detroit | 41 | Hotel/Motel |
| Detroit Marriott at the Renaissance Center | Detroit | 41 | Hotel/Motel |
| DoubleTree Dearborn | Detroit | 41 | Hotel/Motel |
| Doubletree Guest Suites Fort Shelby/Detroit Downtown | Detroit | 41 | Hotel/Motel |
| Hilltop Motel | Detroit | 41 | Hotel/Motel |
| Hilton Garden Inn - Detroit Downtown | Detroit | 41 | Hotel/Motel |
| Holiday Inn Express - Adrian | Adrian | 41 | Hotel/Motel |
| Holiday Inn Express Hotel and Suites - Downtown Detroit | Detroit | 41 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 13 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Hotel St. Regis | Detroit | 41 | Hotel/Motel |
| MGM Grand Detroit | Detroit | 41 | Hotel/Motel |
| Milner Hotel | Detroit | 41 | Hotel/Motel |
| Motel 6 - Adrian | Adrian | 41 | Hotel/Motel |
| MotorCity Casino Hotel | Detroit | 41 | Hotel/Motel |
| Murray Hill Motel | Detroit | 41 | Hotel/Motel |
| Omni Detroit Hotel River Place | Detroit | 41 | Hotel/Motel |
| Residence Inn By Marriott - Detroit Dearborn | Detroit | 41 | Hotel/Motel |
| Stay Inn - Downtown Detroit | Detroit | 41 | Hotel/Motel |
| Super 8 - Adrian | Adrian | 41 | Hotel/Motel |
| The Leland | Detroit | 41 | Hotel/Motel |
| The Shorecrest Motor Inn | Detroit | 41 | Hotel/Motel |
| The Westin Book Cadillac Detroit | Detroit | 41 | Hotel/Motel |
| Westin Detroit Metro Airport | Detroit | 41 | Hotel/Motel |
| Gotta-Scrap Inn | Manchester | 42 | Bed and Breakfast |
| Camp Wathana Lodge & Camp Rentals | Southfield | 42 | Cabins and Cottages |
| Evans Lake Resort | Tipton | 42 | Cabins and Cottages |
| Hideaway Cove | Tipton | 42 | Cabins and Cottages |
| Camp Wathana Lodge & Camp Rentals | Southfield | 42 | Campgrounds |
| Haas Lake Park | New Hudson | 42 | Campgrounds |
| Ja Do Campground | Tipton | 42 | Campgrounds |
| Gotta-Scrap Inn | Manchester | 42 | Historic Inns |
| Best Western Southfield Inn | Southfield | 42 | Hotel/Motel |
| Candlewood Suites | Farmington Hills | 42 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 14 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Candlewood Suites - Detroit/Southfield | Southfield | 42 | Hotel/Motel |
| Comfort Inn - Farmington Hills | Farmington Hills | 42 | Hotel/Motel |
| Comfort Suites - Southfield | Southfield | 42 | Hotel/Motel |
| Courtyard by Marriott - Southfield | Southfield | 42 | Hotel/Motel |
| Courtyard by Marriott- Farmington Hills | Farmington Hills | 42 | Hotel/Motel |
| Days Inn - Southfield | Southfield | 42 | Hotel/Motel |
| Detroit Marriott Southfield | Southfield | 42 | Hotel/Motel |
| Embassy Suites Hotel Detroit - Southfield | Southfield | 42 | Hotel/Motel |
| Fairfield Inn - Farmington Hills | Farmington Hills | 42 | Hotel/Motel |
| Hampton Inn - Southfield | Southfield | 42 | Hotel/Motel |
| Hawthorne Suites - Southfield | Southfield | 42 | Hotel/Motel |
| Hilton Inn Southfield | Southfield | 42 | Hotel/Motel |
| Holiday Inn Hotel & Suites - Farmington Hills / Novi | Farmington Hills | 42 | Hotel/Motel |
| Holiday Inn Southfield | Southfield | 42 | Hotel/Motel |
| Homestead Village - Southfield | Southfield | 42 | Hotel/Motel |
| Knights Inn - Detroit/Farmington Hills | Farmington Hills | 42 | Hotel/Motel |
| Marvins Garden Inn | Southfield | 42 | Hotel/Motel |
| Plaza Hotel Southfield | Southfield | 42 | Hotel/Motel |
| Red Roof Inn - Farmington Hills | Farmington Hills | 42 | Hotel/Motel |
| SpringHill Suites - Southfield | Southfield | 42 | Hotel/Motel |
| Westin Southfield Detroit | Southfield | 42 | Hotel/Motel |
| Baymont Inn & Suites - Toledo/Maumee | Maumee (OH) | 42 | Hotel/Motel |
| Comfort Suites Detroit/ Novi- Wixom | Wixom | 43 | Hotel/Motel |
| Embassy Motel | Oak Park | 43 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 15 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Rentalbug Vacation Rentals | Ferndale | 45 | Bed and Breakfast |
| Rentalbug Vacation Rentals | Ferndale | 45 | Cabins and Cottages |
| Rentalbug Vacation Rentals | Ferndale | 45 | Condos and Rentals |
| Rentalbug Vacation Rentals | Ferndale | 45 | Historic Inns |
| Lacasa Park Hotel | Hazel Park | 46 | Hotel/Motel |
| Grand Commerce Inn Bed & Breakfast | Commerce Township | 47 | Bed and Breakfast |
| Milford Guesthouse Bed and Breakfast | Milford | 47 | Bed and Breakfast |
| The Wren's Nest Bed & Breakfast | West Bloomfield | 47 | Bed and Breakfast |
| Proud Lake Recreation Area | Commerce Township | 47 | Cabins and Cottages |
| Camp Dearborn | Milford | 47 | Campgrounds |
| Proud Lake Recreation Area | Commerce Township | 47 | Campgrounds |
| The Wren's Nest Bed & Breakfast | West Bloomfield | 47 | Historic Inns |
| Hampton Inn - Detroit/Novi | Commerce Township | 47 | Hotel/Motel |
| Travelodge - Royal Oak | Royal Oak | 47 | Hotel/Motel |
| Canterbury Chateau | Brighton | 48 | Bed and Breakfast |
| Chelsea House Victorian Inn | Chelsea | 48 | Bed and Breakfast |
| Lyndon Oaks | Chelsea | 48 | Bed and Breakfast |
| Waterloo Gardens Bed & Breakfast | Chelsea | 48 | Bed and Breakfast |
| Island Lake Resort Motel | Brighton | 48 | Cabins and Cottages |
| Waterloo Recreation Area | Chelsea | 48 | Cabins and Cottages |
| Huron-Clinton Metropolitan Authority | Brighton | 48 | Campgrounds |
| Waterloo Recreation Area | Chelsea | 48 | Campgrounds |
| Barclay Inn - Birmingham | Birmingham | 48 | Hotel/Motel |
| Comfort Inn - Chelsea | Chelsea | 48 | Hotel/Motel |

## Table 2.5-42-F Accomodations within 50 miles of Monroe (Sheet 16 of 16)

| Establishment | City | Miles from Monroe City | Establishment Type |
|---|---|---|---|
| Courtyard by Marriott - Brighton | Brighton | 48 | Hotel/Motel |
| Holiday Inn Express - Birmingham | Birmingham | 48 | Hotel/Motel |
| Holiday Inn Express - Chelsea | Chelsea | 48 | Hotel/Motel |
| Holiday Inn Express Hotel & Suites - Brighton | Brighton | 48 | Hotel/Motel |
| Homewood Suites by Hilton - Brighton | Brighton | 48 | Hotel/Motel |
| Island Lake Resort Motel | Brighton | 48 | Hotel/Motel |
| The Townsend Hotel | Birmingham | 48 | Hotel/Motel |
| Best Western Troy- Madison Inn | Madison Heights | 49 | Hotel/Motel |
| Econo Lodge - Madison Heights | Madison Heights | 49 | Hotel/Motel |
| Fairfield Inn - Madison Heights | Madison Heights | 49 | Hotel/Motel |
| Hampton Inn - Madison Heights | Madison Heights | 49 | Hotel/Motel |
| Knights Inn - Madison Heights | Madison Heights | 49 | Hotel/Motel |
| Radisson Kingsley Inn- Bloomfield Hills | Bloomfield Hills | 49 | Hotel/Motel |
| Red Roof Inn - Madison Heights | Madison Heights | 49 | Hotel/Motel |
| Residence Inn By Marriott - Troy/Madison Heights | Madison Heights | 49 | Hotel/Motel |
| Super 8 - Clawson | Clawson | 49 | Hotel/Motel |

Notes:

1. All cities are located in Michigan unless otherwise psecified.
2. Reference 1-Pure Michigan, Michigan's Official Travel and Tourism Site, "Places to Stay" available online at http://www.michigan.org/Places-to-Stay/Default.aspx. Accessed on November 18, 2009.
3. Reference 2-Destination Toledo Convention and Visitors Bureau, "Accommodations," available online at http://www.dotoledo.org/gtcvb/members/display.asp?id=accommodations. Accessed on November 18, 2009.

## Table 2.5-43 Data for Monroe County School Districts and Charter Schools (2005-2006 School Year)

| Agency Name | City | Number of Schools | Students | Teachers | Student/ Teacher Ratio | Type |
|---|---|---|---|---|---|---|
| Airport Community School District | Carleton | 6 | 3,151 | 158.5 | 19.9 | Regular School District |
| Bedford Public Schools | Temperance | 7 | 5,368 | 297.5 | 18.0 | Regular School District |
| Dundee Community Schools | Dundee | 4 | 1,704 | 90.1 | 18.9 | Regular School District |
| Ida Public School District | Ida | 3 | 1,740 | 98.5 | 17.7 | Regular School District |
| Jefferson Schools (Monroe) | Monroe | 6 | 2,408 | 123.1 | 19.6 | Regular School District |
| Mason Consolidated Schools (Monroe) | Erie | 4 | 1,466 | 98.6 | 14.9 | Regular School District |
| Monroe ISD | Monroe | 4 | 989 | 95 | 10.4 | Regional District |
| Monroe Public Schools | Monroe | 13 | 6,987 | 359.9 | 19.4 | Regular School District |
| New Bedford Academy | Lambertsville | 1 | 166 | 10.4 | 16.0 | Other Education Agency |
| Summerfield School District | Petersburg | 3 | 825 | 46 | 17.9 | Regular School District |
| Triumph Academy | Monroe | 1 | 381 | 14 | 27.2 | Other Education Agency |
| Whiteford Agricultural Schools | Ottawa Lake | 3 | 778 | 43.5 | 17.9 | Regular School District |
| Total | Monroe County | 55 | 25,963 | 1,435.1 | 18.1 | NA |

Source: Reference 2.5-94

**Table 2.5-44 Wayne County School District Information (2005-2006 School Year) (Sheet 1 of 4)**

| District Name | Number of Students | Number of Schools |
|---|---|---|
| Detroit City School District | 133,255 | 235 |
| Plymouth-Canton Community Schools | 18,579 | 26 |
| Dearborn City School District | 18,158 | 36 |
| Livonia Public Schools | 18,108 | 34 |
| Wayne-Westland Community School District | 13,946 | 26 |
| Taylor School District | 10,709 | 20 |
| Grosse Pointe Public Schools | 8,919 | 16 |
| Northville Public Schools | 6,978 | 12 |
| Van Buren Public Schools | 6,303 | 12 |
| Southgate Community School District | 5,753 | 12 |
| Lincoln Park Public Schools | 5,425 | 13 |
| Woodhaven-Brownstown School District | 5,398 | 9 |
| Garden City School District | 5,346 | 9 |
| Wyandotte City School District | 5,156 | 11 |
| Redford Union School District | 4,405 | 10 |
| Romulus Community Schools | 4,354 | 11 |
| Allen Park Public Schools | 3,699 | 6 |
| Gibraltar School District | 3,582 | 8 |
| Highland Park City Schools | 3,508 | 6 |
| South Redford School District | 3,423 | 7 |
| Crestwood School District | 3,418 | 5 |
| Hamtramck Public Schools | 3,309 | 7 |
| Trenton Public Schools | 3,112 | 6 |
| Dearborn Heights School District #7 | 2,871 | 6 |
| Melvindale-North Allen Park Schools | 2,774 | 4 |
| Riverview Community School District | 2,612 | 5 |
| Westwood Community Schools | 2,498 | 6 |
| Huron School District | 2,388 | 5 |
| Detroit Academy Of Arts And Sciences | 2,380 | 3 |

**Table 2.5-44 Wayne County School District Information (2005-2006 School Year) (Sheet 2 of 4)**

| District Name | Number of Students | Number of Schools |
|---|---|---|
| Grosse Ile Township Schools | 2,017 | 4 |
| River Rouge School District | 1,993 | 4 |
| Flat Rock Community Schools | 1,875 | 5 |
| School District Of The City Of Inkster | 1,568 | 4 |
| Cesar Chavez Academy | 1,372 | 3 |
| Summit Academy North | 1,309 | 3 |
| Old Redford Academy | 1,251 | 3 |
| Star International Academy | 1,218 | 1 |
| City Of Harper Woods Schools | 1,216 | 3 |
| Ecorse Public School District | 1,170 | 4 |
| Michigan Technical Academy | 1,160 | 4 |
| YMCA Service Learning Academy | 1,119 | 1 |
| Chandler Park Academy | 1,110 | 3 |
| University Preparatory Academy | 1,098 | 3 |
| Cherry Hill School Of Performing Arts | 1,069 | 1 |
| Edison Public School Academy | 1,052 | 1 |
| Plymouth Educational Center | 919 | 1 |
| Advanced Technology Academy | 869 | 1 |
| Marvin L. Winans Academy Of Performing Arts | 866 | 1 |
| Allen Academy | 827 | 1 |
| Woodward Academy | 773 | 1 |
| Academy For Business And Technology | 712 | 2 |
| Voyageur Academy | 707 | 2 |
| Canton Charter Academy | 687 | 1 |
| Warrendale Charter Academy | 683 | 1 |
| Detroit Merit Charter Academy | 680 | 1 |
| Metro Charter Academy | 653 | 1 |
| Detroit Community High School | 649 | 2 |
| Creative Montessori Academy | 621 | 1 |

## Table 2.5-44 Wayne County School District Information (2005-2006 School Year) (Sheet 3 of 4)

| District Name | Number of Students | Number of Schools |
|---|---|---|
| George Washington Carver Academy | 617 | 1 |
| Riverside Academy | 588 | 2 |
| West Village Academy | 571 | 1 |
| Keystone Academy | 567 | 1 |
| Detroit Enterprise Academy | 554 | 1 |
| Colin Powell Academy | 536 | 1 |
| Detroit Premier Academy | 520 | 1 |
| Dearborn Academy | 488 | 1 |
| Hope Of Detroit Academy | 482 | 2 |
| Henry Ford Academy | 478 | 1 |
| Dove Academy Of Detroit | 467 | 1 |
| Hope Academy | 457 | 1 |
| Joy Preparatory Academy | 456 | 2 |
| Weston Technical Academy | 456 | 1 |
| Nataki Talibah Schoolhouse Of Detroit | 418 | 1 |
| George Crockett Academy | 417 | 2 |
| Life Skills Center Of Metropolitan Detroit | 408 | 1 |
| Thomas-Gist Academy | 402 | 2 |
| Hamtramck Academy | 391 | 1 |
| Trillium Academy | 373 | 1 |
| Summit Academy | 372 | 1 |
| Business Entrepreneurship, Science, Tech. Academy | 371 | 1 |
| David Ellis Academy | 369 | 1 |
| Blanche Kelso Bruce Academy | 366 | 8 |
| Pierre Toussaint Academy | 359 | 1 |
| Universal Academy | 347 | 1 |
| Academy Of Detroit-West | 346 | 2 |
| Bridge Academy | 330 | 1 |
| Marilyn F. Lundy Academy | 314 | 1 |

**Table 2.5-44 Wayne County School District Information (2005-2006 School Year) (Sheet 4 of 4)**

| District Name | Number of Students | Number of Schools |
|---|---|---|
| Academy Of Westland | 313 | 1 |
| Ross Hill Academy | 311 | 2 |
| Timbuktu Academy Of Science And Technology | 303 | 1 |
| Aisha Shule/Web Dubois Prep. School | 302 | 1 |
| Charlotte Forten Academy | 281 | 1 |
| Northpointe Academy | 273 | 1 |
| Commonwealth Community Devel. Academy | 268 | 1 |
| Gaudior Academy | 261 | 1 |
| M.L. King Jr. Education Center | 258 | 1 |
| Detroit School Of Industrial Arts | 256 | 1 |
| Frontier International Academy | 240 | 1 |
| Academy Of Inkster | 239 | 1 |
| Heart Academy | 230 | 1 |
| Hanley International Academy | 206 | 1 |
| American Montessori Academy | 190 | 1 |
| Dr. Charles Drew Academy | 182 | 1 |
| Center For Literacy And Creativity | 161 | 1 |
| Universal Learning Academy | 158 | 1 |
| Michigan Health Academy | 148 | 1 |
| Benjamin Carson Academy | 147 | 1 |
| Casa Richard Academy | 144 | 1 |
| Covenant House Life Skills Center East | 111 | 1 |
| Discovery Arts And Technology Psa | 98 | 1 |
| Covenant House Life Skills Center West | 77 | 1 |
| Wayne Resa | 57 | 3 |
| Covenant House Life Skills Center Central | 0 | 1 |
| Totals | 359,643 | 700 |

Source: Reference 2.5-95

**Table 2.5-45 Lucas County School District Information (2005-2006 School Year) (Sheet 1 of 2)**

| District Name | Number of Students | Number of Schools |
|---|---|---|
| Toledo City | 30,423 | 58 |
| Sylvania City | 7,713 | 12 |
| Washington Local | 6,926 | 12 |
| Anthony Wayne Local | 4,249 | 6 |
| Oregon City | 3,929 | 7 |
| Springfield Local | 3,898 | 6 |
| Maumee City | 2,895 | 6 |
| Ohio Virtual Academy | 2,890 | 1 |
| Alternative Education Academy | 2,556 | 1 |
| Ottawa Hills Local | 996 | 2 |
| Phoenix Academy Community School | 594 | 1 |
| Winterfield Venture Academy | 531 | 1 |
| Bennett Venture Academy | 417 | 1 |
| Toledo Academy Of Learning | 413 | 1 |
| Toledo School For The Arts | 389 | 1 |
| Alliance Academy Of Toledo | 361 | 1 |
| Academy Of Business & Tech | 337 | 1 |
| Lake Erie Academy | 303 | 1 |
| Horizon Science Academy Toledo | 287 | 1 |
| George A. Phillips Academy | 270 | 1 |
| Life Skills Center Of Toledo | 265 | 1 |
| Englewood Peace Academy | 229 | 1 |
| Glass City Academy | 218 | 1 |
| Paul Laurence Dunbar Academy | 201 | 1 |
| Aurora Academy | 195 | 1 |
| Wildwood Environmental Academy | 181 | 1 |
| Imani Learning Academy | 172 | 1 |
| Horizon Science Academy-Springfield | 151 | 1 |
| Toledo Accelerated Academy | 150 | 1 |

**Table 2.5-45 Lucas County School District Information (2005-2006 School Year) (Sheet 2 of 2)**

| District Name | Number of Students | Number of Schools |
|---|---|---|
| Brigadoon Academy Community School | 145 | 1 |
| Performing Arts School Of Toledo | 123 | 1 |
| Summit Academy Toledo | 117 | 1 |
| Polly Fox Academy Community School | 114 | 1 |
| Eagle Academy | 112 | 1 |
| Meadows Choice Community | 104 | 1 |
| Victory Academy Of Toledo | 98 | 1 |
| Summit Academy Secondary School - Toledo | 73 | 1 |
| M.O.D.E.L. Community School | 70 | 1 |
| The Autism Academy Of Learning | 51 | 1 |
| Lucas | N/A | 5 |
| Totals | 73,146 | 140 |

Note:
"N/A" means the data are not available or not applicable

Source: Reference 2.5-96

## Table 2.5-46 Revenues and Expenditures by School District in Monroe County (2004 – 2005) (Sheet 1 of 6)

| | | Amount ($) | Amount/Student | Percent |
|---|---|---|---|---|
| Airport Community School District | Total Revenue: | 27,420,000 | 8,342 | |
| | Revenue by Source | | | |
| | Federal: | 876,000 | 267 | 3 |
| | Local: | 6,653,000 | 2,024 | 24 |
| | State: | 19,891,000 | 6,051 | 73 |
| | Total Expenditures: | 27,235,000 | 8,286 | |
| | Total Current Expenditures: | 25,266,000 | 7,687 | |
| | Instructional Expenditures: | 15,427,000 | 4,693 | 61 |
| | Student and Staff Support: | 1,780,000 | 542 | 7 |
| | Administration: | 2,870,000 | 873 | 11 |
| | Operations, Food Service, other: | 5,189,000 | 1,579 | 21 |
| | Total Capital Outlay: | 1,072,000 | 326 | |
| | Construction: | 454,000 | 138 | |
| Bedford Public Schools | Total Revenue: | 45,247,000 | 8,311 | |
| | Revenue by Source | 985,000 | 181 | 2 |
| | Federal: | 10,142,000 | 1,863 | 22 |
| | Local: | 34,120,000 | 6,267 | 75 |
| | State: | | | |
| | Total Expenditures: | 44,551,000 | 8,184 | |
| | Total Current Expenditures: | 41,270,000 | 7,581 | |
| | Instructional Expenditures: | 25,575,000 | 4,698 | 62 |
| | Student and Staff Support: | 3,402,000 | 625 | 8 |
| | Administration: | 4,486,000 | 824 | 11 |
| | Operations, Food Service, other: | 7,807,000 | 1,434 | 19 |
| | Total Capital Outlay: | 1,220,000 | 224 | |
| | Construction: | 0 | 0 | |

## Table 2.5-46 Revenues and Expenditures by School District in Monroe County (2004 – 2005) (Sheet 2 of 6)

| | | Amount ($) | Amount/Student | Percent |
|---|---|---|---|---|
| Dundee Community Schools | Total Revenue: | 15,727,000 | 9,311 | |
| | Revenue by Source | | | |
| | Federal: | 319,000 | 189 | 2 |
| | Local: | 6,493,000 | 3,844 | 41 |
| | State: | 8,915,000 | 5,278 | 57 |
| | Total Expenditures: | 15,536,000 | 9,198 | |
| | Total Current Expenditures: | 13,345,000 | 7,901 | |
| | Instructional Expenditures: | 7,793,000 | 4,614 | 58 |
| | Student and Staff Support: | 782,000 | 463 | 6 |
| | Administration: | 1,822,000 | 1,079 | 14 |
| | Operations, Food Service, other: | 2,948,000 | 1,745 | 22 |
| | Total Capital Outlay: | 761,000 | 451 | |
| | Construction: | 619,000 | 366 | |
| Ida Public School District | Total Revenue: | 14,618,000 | 8,445 | |
| | Revenue by Source | | | |
| | Federal: | 219,000 | 127 | 1 |
| | Local: | 2,903,000 | 1,677 | 20 |
| | State: | 11,496,000 | 6,641 | 79 |
| | Total Expenditures: | 14,930,000 | 8,625 | |
| | Total Current Expenditures: | 13,906,000 | 8,034 | |
| | Instructional Expenditures: | 8,426,000 | 4,868 | 61 |
| | Student and Staff Support: | 1,301,000 | 752 | 9 |
| | Administration: | 1,485,000 | 858 | 11 |
| | Operations, Food Service, other: | 2,694,000 | 1,556 | 19 |
| | Total Capital Outlay: | 906,000 | 523 | |
| | Construction: | 272,000 | 157 | |

**Table 2.5-46 Revenues and Expenditures by School District in Monroe County (2004 – 2005) (Sheet 3 of 6)**

| | | Amount ($) | Amount/Student | Percent |
|---|---|---|---|---|
| Jefferson Schools | Total Revenue: | 23,450,000 | 9,192 | |
| | Revenue by Source | | | |
| | Federal: | 448,000 | 176 | 2 |
| | Local: | 14,379,000 | 5,637 | 61 |
| | State: | 8,623,000 | 3,380 | 37 |
| | Total Expenditures: | 24,184,000 | 9,480 | |
| | Total Current Expenditures: | 23,967,000 | 9,395 | |
| | Instructional Expenditures: | 14,608,000 | 5,726 | 61 |
| | Student and Staff Support: | 1,476,000 | 579 | 6 |
| | Administration: | 2,897,000 | 1,136 | 12 |
| | Operations, Food Service, other: | 4,986,000 | 1,955 | 21 |
| | Total Capital Outlay: | 38,000 | 15 | |
| | Construction: | 0 | 0 | |
| Mason Consolidated Schools | Total Revenue: | 13,731,000 | 9,203 | |
| | Revenue by Source | | | |
| | Federal: | 439,000 | 294 | 3 |
| | Local: | 4,856,000 | 3,255 | 35 |
| | State: | 8,436,000 | 5,654 | 61 |
| | Total Expenditures: | 14,933,000 | 10,009 | |
| | Total Current Expenditures: | 12,586,000 | 8,436 | |
| | Instructional Expenditures: | 6,712,000 | 4,499 | 53 |
| | Student and Staff Support: | 1,101,000 | 738 | 9 |
| | Administration: | 2,144,000 | 1,437 | 17 |
| | Operations, Food Service, other: | 2,629,000 | 1,762 | 21 |
| | Total Capital Outlay: | 1,325,000 | 888 | |
| | Construction: | 48,000 | 32 | |

**Table 2.5-46 Revenues and Expenditures by School District in Monroe County (2004 – 2005) (Sheet 4 of 6)**

| | | Amount ($) | Amount/Student | Percent |
|---|---|---|---|---|
| Monroe ISD | Total Revenue: | 42,750,000 | 0 | |
| | Revenue by Source | | | |
| | Federal: | 6,232,000 | 0 | 15 |
| | Local: | 26,139,000 | 0 | 61 |
| | State: | 10,379,000 | 0 | 24 |
| | Total Expenditures: | 42,088,000 | 0 | |
| | Total Current Expenditures: | 28,674,000 | 0 | |
| | Instructional Expenditures: | 11,368,000 | 0 | 40 |
| | Student and Staff Support: | 12,363,000 | 0 | 43 |
| | Administration: | 2,682,000 | 0 | 9 |
| | Operations, Food Service, other: | 2,261,000 | 0 | 8 |
| | Total Capital Outlay: | 615,000 | 0 | |
| | Construction: | 205,000 | 0 | |
| Monroe Public Schools | Total Revenue: | 60,436,000 | 8,560 | |
| | Revenue by Source | | | |
| | Federal: | 2,885,000 | 409 | 5 |
| | Local: | 23,406,000 | 3,315 | 39 |
| | State: | 34,145,000 | 4,836 | 56 |
| | Total Expenditures: | 58,872,000 | 8,339 | |
| | Total Current Expenditures: | 54,405,000 | 7,706 | |
| | Instructional Expenditures: | 30,681,000 | 4,346 | 56 |
| | Student and Staff Support: | 5,140,000 | 728 | 9 |
| | Administration: | 6,551,000 | 928 | 12 |
| | Operations, Food Service, other: | 12,033,000 | 1,704 | 22 |
| | Total Capital Outlay: | 1,959,000 | 277 | |
| | Construction: | 1,121,000 | 159 | |

**Table 2.5-46 Revenues and Expenditures by School District in Monroe County (2004 – 2005) (Sheet 5 of 6)**

| | | Amount ($) | Amount/Student | Percent |
|---|---|---|---|---|
| New Bedford Academy | Total Revenue: | 1,160,000 | 7,945 | |
| | Revenue by Source | | | |
| | Federal: | 26,000 | 178 | 2 |
| | Local: | 59,000 | 404 | 5 |
| | State: | 1,075,000 | 7,363 | 93 |
| | Total Expenditures: | 986,000 | 6,753 | |
| | Total Current Expenditures: | 834,000 | 5,712 | |
| | Instructional Expenditures: | 422,000 | 2,890 | 51 |
| | Student and Staff Support: | 14,000 | 96 | 2 |
| | Administration: | 279,000 | 1,911 | 33 |
| | Operations, Food Service, other: | 119,000 | 815 | 14 |
| | Total Capital Outlay: | 11,000 | 75 | |
| | Construction: | 0 | 0 | |
| Summerfield School District | Total Revenue: | 6,516,000 | 7,739 | |
| | Revenue by Source | | | |
| | Federal: | 160,000 | 190 | 2 |
| | Local: | 998,000 | 1,185 | 15 |
| | State: | 5,358,000 | 6,363 | 82 |
| | Total Expenditures: | 6,662,000 | 7,912 | |
| | Total Current Expenditures: | 6,364,000 | 7,558 | |
| | Instructional Expenditures: | 3,706,000 | 4,401 | 58 |
| | Student and Staff Support: | 583,000 | 692 | 9 |
| | Administration: | 827,000 | 982 | 13 |
| | Operations, Food Service, other: | 1,248,000 | 1,482 | 20 |
| | Total Capital Outlay: | 214,000 | 254 | |
| | Construction: | 5,000 | 6 | |

**Table 2.5-46 Revenues and Expenditures by School District in Monroe County (2004 – 2005) (Sheet 6 of 6)**

| | | Amount ($) | Amount/Student | Percent |
|---|---|---|---|---|
| Triumph Academy | Total Revenue: | 2,788,000 | 11,333 | |
| | Revenue by Source | | | |
| | Federal: | 320,000 | 1,301 | 11 |
| | Local: | 666,000 | 2,707 | 24 |
| | State: | 1,802,000 | 7,325 | 65 |
| | Total Expenditures: | 2,754,000 | 11,195 | |
| | Total Current Expenditures: | 2,754,000 | 11,195 | |
| | Instructional Expenditures: | 926,000 | 3,764 | 34 |
| | Student and Staff Support: | 150,000 | 610 | 5 |
| | Administration: | 646,000 | 2,626 | 23 |
| | Operations, Food Service, other: | 1,032,000 | 4,195 | 37 |
| | Total Capital Outlay: | 0 | 0 | |
| | Construction: | 0 | 0 | |
| Whiteford Agricultural Schools | Total Revenue: | 6,422,000 | 8,276 | |
| | Revenue by Source | | | |
| | Federal: | 81,000 | 104 | 1 |
| | Local: | 1,937,000 | 2,496 | 30 |
| | State: | 4,404,000 | 5,675 | 69 |
| | Total Expenditures: | 6,599,000 | 8,504 | |
| | Total Current Expenditures: | 5,999,000 | 7,731 | |
| | Instructional Expenditures: | 3,740,000 | 4,820 | 62 |
| | Student and Staff Support: | 344,000 | 443 | 6 |
| | Administration: | 796,000 | 1,026 | 13 |
| | Operations, Food Service, other: | 1,119,000 | 1,442 | 19 |
| | Total Capital Outlay: | 132,000 | 170 | |
| | Construction: | 29,000 | 37 | |

Source: Reference 2.5-97

## Table 2.5-47 Expenditures for Public Elementary and Secondary School Districts (2004 – 2005)

| State and independent charter school districts | Median Expenditures Per Pupil | | | | |
|---|---|---|---|---|---|
| | Current $ Expenditures | | Capital Outlays ($) | Other Programs and Payments to State and Local Governments ($) | Interest on Long-Term Debt ($) |
| | Total | Instruction Related | | | |
| United States | 9,392 | 5,326 | 398 | 19 | 136 |
| Michigan | 9,103 | 5,225 | 273 | 67 | 351 |
| Ohio | 8,687 | 4,948 | 338 | 113 | 126 |

Source: Reference 2.5-98

## Table 2.5-48 Monroe County Recreational Facilities(Sheet 1 of 12)

**Parks**

| Park Type | Name | Location | Facilities | Acres |
|---|---|---|---|---|
| County Parks | Heck Park | Monroe City | Vietnam Veterans Memorial and Museum, playground, pavilion, sled hill, trails, basketball, exercise court | 15 |
| | Nike Park | Frenchtown Twp. | picnic area, soccer fields, playground, model aircraft area, dog training area | 80 |
| | Vienna Park | Bedford Twp. | ball diamonds, soccer fields, natural area, picnic area, shelters, playground, disk golf course | 57 |
| | Waterloo Park | Monroe Twp. | walking path, fishing pier, river access, canoe landing, exercise court, picnic shelter | 9 |
| | West County Park | Dundee Twp. | natural habitat, river access, benches, shelters | 60 |
| | **Total** | | | **221** |
| State Owned Parks | Sterling State Park | Monroe/Frenchtown Twp. | Lake Erie beach, boat launch, campground, play ground, nature trails | 1,300 |
| | Petersburg State Game Area | Summerfield Twp. hunting | hunting | 935 |
| | Pointe. Mouillee State Game Area | Berlin Twp (also Wayne Co.) | hunting, fishing, shooting range, boat ramp | 3,466 |
| | Erie State Game Area | Erie Twp. | hunting, boat launch | 1,519 |
| | I-75 Rest Area | Monroe Twp. | rest rooms, picnic area, tourist information | 25 |
| | U.S.-23 Rest Area | Summerfield Twp. | rest rooms, picnic area, tourist information | 28 |
| | I-275 Rest Area | Ash Twp. | rest rooms, picnic area, tourist information | 35 |
| | Bolles Harbor Access Site | Monroe Twp. | boat launch, fishing, restrooms, parking | 77 |
| | Otter Creek Access Site | LaSalle Twp. | Lake Erie access, fishing pier, restrooms | 26 |
| | Swan Creek Access Site | Berlin Twp. | boat ramp, fishing, restrooms | 2 |
| | **Total** | | | **7,413** |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 2 of 12)

**Parks**

| Park Type | Name | Location | Facilities | Acres |
|---|---|---|---|---|
| City & Township Parks | Ash Twp. Unity Park | Ash | proposed - ball diamonds, trail, water recreation | 27.3 |
| | Carr Park | Bedford | picnic shelter, playground, ball diamond, tennis, basketball | 5.3 |
| | Lewis Anstead Park | Bedford | undeveloped | 56.0 |
| | Parmelee Park | Bedford | nature trails, basketball, playground, picnic sites, lighted ball diamonds, tennis courts | 8.8 |
| | Samaria Park | Bedford | playground, community center building, picnic sites, trails, ball diamonds | 13.2 |
| | White Park | Bedford | playground, picnic sites, ball diamonds, exercise trail, basketball, tennis | 28.1 |
| | Ash-Carleton Park | Carleton | ball diamonds, playground, trails, picnic sites, tennis, natural area, basketball | 23.1 |
| | Rod Park | Dundee Twp. | ball diamonds, natural area | 19.1 |
| | Dundee Soccer Fields | Dundee Village | soccer fields | 7.8 |
| | Ford Park | Dundee Village | river access, picnic sites | 2.9 |
| | Triangle Park | Dundee Village | gazebo, benches | 0.2 |
| | Wolverine Park | Dundee Village | playground, basketball, tennis, horseshoes, boat ramp, fishing, picnicking, community bldg | 4.0 |
| | South Erie Park | Erie | playground, ball diamonds, picnic sites | 18.1 |
| | Frenchtown Kiwanis Park | Frenchtown | ball diamonds, playground, picnic sites, natural area | 14.8 |
| | Frenchtown Twp. Hall Park | Frenchtown | ball diamonds, playground, picnic sites, tennis courts, walking trail, sledding hill, rec. building | 12.2 |
| | Frenchtown Park #3 | Frenchtown | under development - softball, soccer, playground | 16.0 |
| | Ida Twp. Park | Ida | playground, horseshoes, pathway, picnic area | 10.8 |
| | Luna Pier beach & pier | Luna Pier | fishing pier, picnic sites, Lake Erie beach | 6.4 |
| | Water Tower Park | Luna Pier | playground, ball diamond, tennis, basketball, picnic area | 12.4 |
| | Maybee Community Park | Maybee | ball diamonds, playground | 10.9 |
| | Wilson Park | Milan City | ball diamonds, trails, picnic sites, playground | 24.0 |
| | Hellenberg Park | Monroe City | ball diamonds, river access, natural area | 13.0 |
| | Loranger Square | Monroe City | picnic tables, historic site, gazebo, fountain | 1.0 |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 3 of 12)

**Parks**

| Park Type | Name | Location | Facilities | Acres |
|---|---|---|---|---|
| City & Township Parks (continued) | Munson Park | Monroe City | ball diamonds, playground, soccer fields, picnic sites, sledding hill, tennis courts | 240 |
| | Navarre Field | Monroe City | ball diamonds, tennis courts, playground | 8.5 |
| | River Walk | Monroe City | riverside walking path | 0.9 |
| | Roessler Field | Monroe City | ball diamonds, river access | 11.1 |
| | St. Mary's Park | Monroe City | playground, amphitheater, picnic sites, tennis, basketball | 3.4 |
| | Veteran's Park | Monroe City | playground, river access, picnic areas | 7.8 |
| | Monroe Charter Twp. Community Park | Monroe Twp. | proposed/under development - ball diamonds, nature trail, basketball, volleyball, tennis, playground | 37.0 |
| | Perry Park | Petersburg | playground | 0.4 |
| | Fernstrom Park | Petersburg | river access, picnic sites | 8.2 |
| | Raisinville Twp. | Raisinville | undeveloped, river access, natural area | 17.9 |
| | Dodge Bros. Park | S. Rockwood | natural area, river access | 25.8 |
| | HCMA Property | S. Rockwood | natural area, river access | 34.5 |
| | LaBo Park | S. Rockwood | fishing access, picnic sites | 0.4 |
| | Village Park | S. Rockwood | ball diamonds, ice skating | 10.2 |
| | Whiteford Park | Whiteford | proposed/under development - ball diamonds, trails, soccer, fossil dig | 80.0 |
| | Total | | | **821.5** |
| Neighborhood and Subdivision Parks | Bicentennial Park | Bedford | gazebo, foot bridge | 1.0 |
| | Bridgeway | Bedford | none | 2.6 |
| | Canterbury Forest | Bedford | none | 0.9 |
| | Colonial (Cranbrook) | Bedford | playground, picnic tables | 0.9 |
| | Colonial (Middlebury) | Bedford | none | 1.3 |
| | Colonial (Ridgedale) | Bedford | none | 1.2 |
| | Colonial (Wellsley) | Bedford | none | 1.2 |
| | Cottonwood | Bedford | none | 0.3 |
| | Crosscreeks (Indian Creek) | Bedford | none | 14.6 |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 4 of 12)

**Parks**

| Park Type | Name | Location | Facilities | Acres |
|---|---|---|---|---|
| Neighborhood and Subdivision Parks (continued) | Crosscreeks (Ryan Common Area) | Bedford | none | 1.7 |
| | Green Hills Community | Bedford | pool, clubhouse, tennis | 13.4 |
| | Hooverdale - Windingbrook | Bedford | none | 8.7 |
| | Inverness | Bedford | playground | 0.7 |
| | Jamie Park (Kimberly Oaks) | Bedford | none | 4.8 |
| | Lambert Estates | Bedford | none | 1.2 |
| | Miller Park | Bedford | play area | 1.6 |
| | Mohawk Trails | Bedford | playground, basketball | 0.3 |
| | Shenandoah Hills | Bedford | none | 0.5 |
| | Silas and Julia Smith Park | Bedford | picnic sites, basketball, playgrounds | 2.1 |
| | Tanglewood | Bedford | none | 0.8 |
| | Woodstream Acres | Bedford | none | 0.8 |
| | Northtowne Meadows | Bedford | playground, tennis court | 1.6 |
| | Valleybrook Park | Bedford | none | 2.8 |
| | Wildhaven | Bedford | none | 3.2 |
| | Carleton MHP | Carleton Village | playground | 0.2 |
| | Yorkshire Manor MHP | Carleton Village | playground | 0.4 |
| | Waterworks Park (Jaycees) | Dundee Village | playground | 0.3 |
| | Maplewood Park | Erie Twp. | playground, ball diamond, basketball, picnic area | 4.1 |
| | Morin Point Park | Erie Twp. | playground | 1.6 |
| | Bay Crest Assn. | Frenchtown | beach access | 4.0 |
| | Brest Bay Grove | Frenchtown | beach, playground, picnic | 5.5 |
| | Detroit Beach Assn. | Frenchtown | beach | 2.3 |
| | Detroit Beach Assn. | Frenchtown | playground | 4.2 |
| | Detroit Beach Assn. | Frenchtown | playground, basketball | 5.4 |
| | Detroit Beach Assn. | Frenchtown | playground, picnic shelter | 7.3 |
| | Erie Shores Assn. | Frenchtown | beach access, picnic grounds | 0.7 |
| | Erie Shores Assn. | Frenchtown | playground, picnic, basketball, ball diamond | 2.1 |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 5 of 12)

**Parks**

| Park Type | Name | Location | Facilities | Acres |
|---|---|---|---|---|
| Neighborhood and Subdivision Parks (Continued) | Frenchtown Villa | Frenchtown | pool, clubhouse | 0.4 |
| | Frenchtown Villa | Frenchtown | playground | 0.6 |
| | Grand Beach Assn. | Frenchtown | playground, tennis, basketball, ball diamond, picnic | 4.7 |
| | Indian Trails Assn. | Frenchtown | ball diamond | 0.6 |
| | Indian Trails Assn. | Frenchtown | play equipment, tennis court, basketball | 1.0 |
| | Indian Trails Assn. | Frenchtown | beach access, club house | 1.0 |
| | Indian Trails Assn. | Frenchtown | playground, basketball | 1.5 |
| | Kimberly Estates | Frenchtown | pool, tennis, clubhouse | 1.5 |
| | Pleasantville | Frenchtown | basketball | 5.1 |
| | Pte. Aux Peaux Farms Assn | Frenchtown | beach access | 3.2 |
| | Pte. Aux Peaux Farms Assn | Frenchtown | play equipment, shelter, basketball, ball diamond | 2.7 |
| | Stony Pt. Beach Assn. | Frenchtown | none | 0.5 |
| | Stony Pt. Beach Assn. | Frenchtown | beach access | 1.0 |
| | Stony Pt. Beach Assn. | Frenchtown | playground, basketball | 3.2 |
| | Stony Pt. Peninsula Assn. | Frenchtown | play area, swings | 5.0 |
| | Woodland Beach Assn. | Frenchtown | playground, ball diamond | 2.9 |
| | Woodland Beach Assn. | Frenchtown | ball diamond | 3.1 |
| | Woodland Beach Assn. | Frenchtown | playground, beach | 10.5 |
| | Luna Pier Park | Luna Pier | playground | 0.6 |
| | Seventh Street Park | Luna Pier | playground, ball diamond | 0.9 |
| | Arbor/Lorain Park | Monroe City | playground | 0.1 |
| | Cairns Field | Monroe City | playground, ball diamond | 4.2 |
| | Calgary Park | Monroe City | playground, pavilion | 2.0 |
| | Cranbrook Park | Monroe City | picnic area, natural area | 7.2 |
| | Depot Square | Monroe City | none | 0.1 |
| | Hoffman Park | Monroe City | playground, picnic area | 5.2 |
| | James / Hendricks Park | Monroe City | none | 2.3 |
| | Lavender Park | Monroe City | tennis, playground, picnic | 1.3 |
| | Memorial Park | Monroe City | benches, cemetery | 0.7 |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 6 of 12)

**Parks**

| Park Type | Name | Location | Facilities | Acres |
|---|---|---|---|---|
| Neighborhood and Subdivision Parks (continued) | Mill Race Park | Monroe City | river access | 11 |
| | Oak Forest Park | Monroe City | natural area | 8.2 |
| | Orchard Center | Monroe City | playground, basketball | 2.6 |
| | Plum Creek Park | Monroe City | playground. basketball, picnic area | 2.0 |
| | Rauch Park | Monroe City | playground | 3.4 |
| | Soldier & Sailors Park | Monroe City | playground, benches, shuffleboard, horseshoes | 5.2 |
| | St. Antoine's Park | Monroe City | historic site, benches | 0.3 |
| | Winston Park | Monroe City | playground, benches | 0.3 |
| | Evergreen Acres | Monroe Twp. | none | 0.9 |
| | Avalon Beach Assn. Park | Monroe Twp. | beach access, basketball | 1.0 |
| | Bolles Harbor Assn. Park | Monroe Twp. | playground, basketball, tennis, ball diamond | 8.0 |
| | Parkside | Monroe Twp. | river access | 4.7 |
| | Ravenwood | Monroe Twp. | playground, shelter | 2.0 |
| | S. Monroe Townsite | Monroe Twp. | playground, ball diamond, basketball, tennis | 4.6 |
| | Total | | | **233.6** |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 7 of 12)

| Site | Location | Owner | Facilities | Acres |
|---|---|---|---|---|
| Pointe. Mouillee Access Site | Berlin | State of Michigan | boat launch | 1.0 |
| Swan Creek Access Site | Berlin | State of Michigan | boat launch, restrooms | 1.3 |
| Wolverine Park | Dundee Village | Village of Dundee | boat launch | 4.0 |
| Game Area | Erie | State of Michigan | boat launch | 2.9 |
| Sterling State Park | Frenchtown | State of Michigan | boat launch, docks | 1,300 |
| Luna Pier boat launch | Luna Pier | City of Luna Pier | boat launch | 9.0 |
| Public Access Site | Luna Pier | Consumers Power | fishing access | 1.5 |
| Hellenburg Park | Monroe | City of Monroe | boat launch | 2.0 |
| Bolles Harbor | Monroe Twp. | State of Michigan | boat launch, restrooms | 77.1 |
| Hoffman Mem. Pier | Monroe Twp. | Monroe Twp. | fishing pier | 0.4 |
| Waterloo Park | Monroe Twp. | Monroe County | fishing pier, canoe landing | 11.3 |
| | **Total** | | | **1410.5** |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 8 of 12)

**Monroe County Campgrounds**

| Campground | Location | Modern Sites | Primitive Sites | Acres |
|---|---|---|---|---|
| Wilderness Retreat | Dundee Twp. | 50 | 0 | 50.5 |
| Camp Lord Willing | Frenchtown | 30 | 36 | 28.2 |
| Sterling State Park (public) | Frenchtown | 256 | 0 | 1,300 |
| KC Campground | London | 50 | 50 | 20.6 |
| Harbortown RV Resort | Monroe Twp. | 250 | 0 | 30.5 |
| Monroe Co. KOA | Summerfield | 249 | 0 | 41.9 |
| Pirolli Park | Summerfield | 100 | 50 | 68.7 |
| Totem Pole Park | Summerfield | 121 | 0 | 34.6 |
| Covered Wagon Campground | Whiteford | 100 | 13 | 18.7 |
| | **Total** | **1206** | **149** | **1593.7** |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 9 of 12)

**Monroe County Marinas**

| Marina | Location | Boat Slips |
|---|---|---|
| Lake Pointe Marina | Berlin | 68 |
| Swan Boat Club | Berlin | 127 |
| Swan Yacht Basin | Berlin | 29 |
| Andrew's Boat Dock | Erie | 145 |
| Blair's Marina | Erie | 80 |
| Burlen's Dock | Erie | 35 |
| Erie Bay Harbor Marina | Erie | 227 |
| Folden Marina | Erie | 22 |
| Halfway Marina | Erie | 39 |
| John Fisher's Marina | Erie | 32 |
| JoJo's Marina | Erie | 57 |
| Lands End Marina | Erie | 32 |
| Lost Peninsula Marina | Erie | 300 |
| River Café & Marina | Erie | 6 |
| State Line Marina | Erie | 141 |
| T & L Marine | Erie | 10 |
| Tom's Boat Dock | Erie | 39 |
| Estral Beach Island Marina | Estral Beach | 69 |
| Brest Bay Marina | Frenchtown | 358 |
| Detroit Beach Boat Club | Frenchtown | 94 |
| Lighthouse Harbor Marina | LaSalle | 177 |
| North Cape Yacht Club | LaSalle | 150 |
| Otter Creek Marina | LaSalle | 75 |
| Toledo Beach Marina | LaSalle | 555 |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 10 of 12)

**Monroe County Marinas**

| Marina | Location | Boat Slips |
|---|---|---|
| Luna Pier Harbour Club | Luna Pier | 392 |
| Roe’s Riverside Bait & Tackle | Monroe City | 14 |
| Riverfront Marina | Monroe City | 155 |
| Mooner’s Marina | Monroe City | 34 |
| Charlie's Boat & Bait | Monroe Twp. | 50 |
| Clarks Landing | Monroe Twp. | 24 |
| Erie Party Shoppe & Docks | Monroe Twp. | 70 |
| Harbor Marine | Monroe Twp. | 20 |
| Monroe Boat Club | Monroe Twp. | 88 |
| Monroe Marina | Monroe Twp. | 42 |
| OPM Club | Monroe Twp. | 28 |
| Trout’s Yacht Basin | Monroe Twp. | 94 |
| LaPlaisance Creek Marina | Monroe Twp. | 68 |
| | **Total** | **3,946** |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 11 of 12)

**Shooting Ranges and Sportsmen's Club**

| Range/Club | Township |
|---|---|
| Southern Mich. Sportsmen’s Club | Bedford Twp. |
| Dundee Sportsman’s Club | Dundee Twp. |
| Mudjaw Bowman Lodge | Erie Twp. |
| Carleton Sportsmen’s Club | Exeter Twp. |
| Century Gun Club | Exeter Twp. |
| East Rockwood Sportsman’s Club | Exeter Twp. |
| Brest Bay Sportsman’s Club | Frenchtown Twp. |
| London Sportsmen Rod & Gun Club | London Twp. |
| Maybee Sportsmen’s Club | London Twp. |
| Sexy Pheasant Hunting Preserve | Milan Twp. |
| Monroe Rod & Gun Club | Monroe Twp. |
| Monroe Rifle & Pistol Club | Raisinville Twp. |
| Canvasback Gun Club | Raisinville Twp. |
| Ottawa Lake Sportsman’s Club | Whiteford Twp. |

## Table 2.5-48 Monroe County Recreational Facilities (Sheet 12 of 12)

**Miscellaneous Recreational Facilities**

| Facility | Location | Description | Acres |
|---|---|---|---|
| Flat Rock Speedway | Ash Twp. | race track | 32 |
| VFW Post 4093 | Ash Twp. | ball diamonds, picnic shelter | 8 |
| Brookwood Swim Club | Bedford Twp. | private swim club | 5 |
| Douglas Meadows Stables | Bedford Twp. | private stables | 21 |
| Forestview Lanes | Bedford Twp. | bowling, volleyball | 9 |
| Howard's Riding Academy | Bedford Twp. | private stables | 11 |
| Hunter's Run Riding Stables | Bedford Twp. | private stables | 50 |
| Lambertville Civic Club | Bedford Twp. | sports fields, clubhouse | 8 |
| Soda Park | Bedford Twp. | ball diamonds | 20 |
| Windsong Stables | Bedford Twp. | private stables | 17 |
| Fireman's Park | Berlin Twp. | picnic area, shelter | 7 |
| | **Total** | | 188 |

Source: Reference 2.5-12

## Table 2.5-49 List of Recreation and Lodging Facilities within a 10-mi Radius (Sheet 1 of 3)

| County | Type | Township | Facility Name | Compass Direction from Fermi | Distance (miles) From Fermi | Period of Operation |
|---|---|---|---|---|---|---|
| Monroe | Golf Course | Ash | Carleton Glen Golf Club | NW | 9.75 | Summer |
| Monroe | Race Track | Ash | Flat Rock Speedway | NNW | 8.5 | Summer |
| Monroe | Park | Berlin | Berlin Twp. Park | NNW | 4.12 | Summer |
| Monroe | Golf Course | Berlin | Lilac Golf Course | NNW | 3.23 | Summer |
| Monroe | Park | Berlin | Pointe Mouille State Game Area | NE | 5.5 | Yr. Round |
| Monroe | Marina Aquatic | Berlin | Swan Yacht Basin | NNW | 1.39 | Summer |
| Monroe | Golf Course | Berlin | Wesburn Golf Course | N | 7.51 | Summer |
| Monroe | Marina/ Aquatic | Frenchtown | Brest Bay Marina | SW | 2.42 | Yr. Round |
| Monroe | Camp Grounds | Frenchtown | Camp Lord Willing | W | 7.09 | Yr. Round |
| Monroe | Park | Frenchtown | Heck Park | WSW | 6.2 | Summer |
| Monroe | Park | Frenchtown | Munson Park | WSW | 9.49 | Summer |
| Monroe | Historic Site | Frenchtown | Navarre-Anderson Trading Post | WSW | 10.6 | Yr. Round |
| Monroe | Park | Frenchtown | Nike Park | WNW | 6.5 | Summer |
| Monroe | Golf Course | Frenchtown | Old Town Golf and Sportland | W | 5.98 | Summer |
| Monroe | Golf Course | Frenchtown | Raisin River Golf Club | WSW | 5.66 | Summer |
| Monroe | Golf Course | Frenchtown | Sandy Creek Golf Course | W | 8.7 | Summer |
| Monroe | Park | Frenchtown | Sterling State Park | SW | 5.18 | Summer |
| Monroe | Park | Monroe | Hellenburg Park | WSW | 7.26 | Summer |
| Monroe | Golf Course | Monroe | Monroe Golf and Country Club | WSW | 6.36 | Summer |
| Monroe | Marina/ Aquatic | Monroe | Riverfront Marina | WSW | 7.1 | Summer |
| Monroe | Park | Monroe | Veteran’s Park | WSW | 8.6 | Summer |
| Monroe | Marina/ Aquatic | Monroe Twp. | Bolles Harbor | SW | 9.1 | Summer |

## Table 2.5-49 List of Recreation and Lodging Facilities within a 10-mi Radius (Sheet 2 of 3)

| County | Type | Township | Facility Name | Compass Direction from Fermi | Distance (miles) From Fermi | Period of Operation |
|---|---|---|---|---|---|---|
| Monroe | Marina/ Aquatic | Monroe Twp. | Erie Party Shoppe & Docks | SW | 9.24 | Yr. Round |
| Monroe | Lodging | Monroe Twp. | Harbortown RV Resort | SW | 8.73 | Summer |
| Monroe | Marina/ Aquatic | Monroe Twp. | Harbor Marine | SW | 9.14 | Summer |
| Monroe | Golf Course | Monroe Twp. | Links at Lake Erie | SW | 8.91 | Summer |
| Monroe | Marina/ Aquatic | Monroe Twp. | Miller Boat Livery | SW | 9.24 | Summer |
| Monroe | Fairgrounds | Monroe Twp. | Monroe County Fairgrounds | WSW | 10.65 | Yr. Round |
| Monroe | CampGrounds | Monroe Twp. | Sunny South Villa | WSW | 9.87 | Summer |
| Monroe | Marina/ Aquatic | Monroe Twp. | Trout's Yacht Basin | SW | 10.16 | Summer |
| Monroe | Park | Monroe Twp. | Waterloo Park | WSW | 9.1 | Summer |
| Wayne | Park | Brownstown | Lake Erie Metropark | NNE | 7.87 | Yr. Round |
| Wayne | Marina/ Aquatic | Gibraltar | Humbug Marina Inc. | NNE | 9.79 | Summer |
| Wayne | Marina/ Aquatic | Gibraltar | Island Marina | NNE | 9.3 | Summer |
| Wayne | Park | Rockwood | Mercure Park | N | 7.56 | Summer |
| Monroe | Lodging | Frenchtown | Cross Country Inn | WSW | 5.53 | Yr. Round |
| Monroe | Lodging | Frenchtown | Hampton Inn | WSW | 5.65 | Yr. Round |
| Monroe | Lodging | Frenchtown | Hometown Inn | WSW | 5.53 | Yr. Round |
| Monroe | Lodging | Frenchtown | Travel Inn | WSW | 5.69 | Yr. Round |
| Monroe | Lodging | Monroe | Knights Inn | WSW | 6 | Yr. Round |
| Monroe | Lodging | Monroe | Holiday Inn Express Hotel & Suites | WSW | 6.14 | Yr. Round |
| Monroe | Lodging | Monroe | Sunset Motel | WSW | 8.25 | Yr. Round |
| Monroe | Lodging | Monroe Twp. | Amerihost Inn | SW | 8.87 | Yr. Round |
| Monroe | Lodging | Monroe Twp. | Comfort Inn | SW | 9.33 | Yr. Round |

## Table 2.5-49 List of Recreation and Lodging Facilities within a 10-mi Radius (Sheet 3 of 3)

| County | Type | Township | Facility Name | Compass Direction from Fermi | Distance (miles) From Fermi | Period of Operation |
|---|---|---|---|---|---|---|
| Monroe | Lodging | Monroe Twp. | Hollywood Motel | WSW | 9.19 | Yr. Round |
| Monroe | Lodging | Monroe Twp. | I-75 Rest Area | SW | 10.21 | Yr. Round |
| Monroe | Lodging | Monroe Twp. | Motel Seven | WSW | 9.52 | Yr. Round |
| Wayne | Lodging | Flat Rock | Seaway Motel | N | 10.12 | Yr. Round |
| Wayne | Lodging | Flat Rock | Sleep Inn | N | 9.06 | Yr. Round |

Source: Reference 2.5-99

## Table 2.5-50 Township Zoning Reviews By Requested District (2004)

| Township | Total Cases | Agriculture | Rural Estate | Single Family | Multi-Family | Mobile Home | PBO | Commercial | Freeway Service | PUD | Text |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ash | 7 | | 2 | 2 | | | | 2 | 1 | | |
| Bedford | 10 | | | 5 | 1 | 1 | 1 | | | 1 | 2 |
| Berlin | 8 | | | 5 | | | | | | 1 | 2 |
| Dundee | 3 | | | | | | | 1 | | | 2 |
| Erie | 2 | | | | | | | | | | 2 |
| Exeter | 2 | | | | | | | | | | 2 |
| Frenchtown | 14 | | | 3 | | 1 | | 6 | | | 4 |
| Ida | 4 | | | | | | | | | | 4 |
| LaSalle | 2 | | | | | | | | | | 2 |
| London | 2 | 2 | | | | | | | | | |
| Milan | 4 | 1 | | | | | | | | | 3 |
| Monroe | 3 | | | 2 | | | | | | | 1 |
| Raisinville | 3 | 2 | | | | | | | | | 1 |
| Summerfield | 1 | | | | | | | 1 | | | |
| Whiteford | 3 | | | 1 | | | | 1 | | | 1 |
| Total* | 68 | 5 | 2 | 18 | 1 | 2 | 1 | 11 | 1 | 2 | 26 |

Note: Discrepancies in some totals are due to multiple-district rezoning requests
Source: Reference 2.5-31

## Table 2.5-51 Land Use and Change for Frenchtown Township, Monroe County, and Wayne County (2000)

| Land Use / Land Cover (in acres) | Frenchtown Township Acreage | % | Change 1990-2000 | % | Monroe County Acreage | % | Change 1990-2000 | % | Wayne County Acreage | % | Change 1990-2000 | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Residential | 5,373 | 19.3 | 993 | 22.7 | 53,028 | 14.8 | 9,778 | 22.6 | 159,966 | 40.5 | 7,307 | 4.8 |
| Single-Family | 5,239 | 18.8 | 950 | 22.2 | 52,564 | 14.6 | 9,675 | 22.6 | 149,807 | 38.0 | 6,769 | 4.7 |
| Multiple-Family | 134 | 0.5 | 42 | 46.1 | 463 | 0.1 | 102 | 28.3 | 10,160 | 2.6 | 538 | 5.6 |
| Non-Residential | 3,752 | 13.5 | 594 | 18.8 | 20,500 | 5.7 | 3,714 | 22.1 | 109,873 | 27.8 | 8,471 | 8.4 |
| Commercial and Office | 639 | 2.3 | 95 | 17.5 | 3,049 | 0.8 | 735 | 31.8 | 23,547 | 6.0 | 1,811 | 8.3 |
| Industrial | 413 | 1.5 | 312 | 308.4 | 3,012 | 0.8 | 878 | 41.1 | 26,168 | 6.6 | 2,728 | 11.6 |
| Institutional | 389 | 1.4 | 32 | 9.1 | 1,915 | 0.5 | 200 | 11.6 | 17,100 | 4.3 | 845 | 5.2 |
| Transportation, Communication, and Utility | 1,250 | 4.5 | -17 | -1.3 | 6,991 | 1.9 | 446 | 6.8 | 24,004 | 6.1 | 1,583 | 7.1 |
| Cultural, Outdoor Recreation, and Cemetery | 1,059 | 3.8 | 171 | 19.2 | 5,533 | 1.5 | 1,455 | 35.7 | 19,054 | 4.8 | 1,504 | 8.6 |
| Under Development | 178 | 0.6 | 150 | 544.3 | 910 | 0.3 | 741 | 438.3 | 5,338 | 1.4 | 3,775 | 241.4 |
| Active Agriculture | 14,111 | 50.8 | -1,838 | -11.5 | 223,332 | 62.2 | -17,029 | -7.1 | 25,844 | 6.5 | -20,338 | -44.0 |
| Grassland and Shrub | 957 | 3.4 | 111 | 13.1 | 12,322 | 3.4 | 2,385 | 24.0 | 27,499 | 7.0 | -4,155 | -13.1 |
| Woodland and Wetland | 2,618 | 9.4 | 118 | 4.7 | 39,442 | 11.0 | -175 | -0.4 | 49,701 | 12.6 | 1,325 | 2.7 |
| Extractive and Barren | 0 | 0.0 | 0 | - | 2,435 | 0.7 | 1,032 | 73.5 | 2,208 | 0.6 | 488 | 28.4 |
| Water | 808 | 2.9 | -128 | -13.7 | 7,338 | 2.0 | -445 | -5.7 | 4,152 | 1.1 | 339 | 8.9 |
| Total Acres | 27,797 | 100.0 | 0 | 0.0 | 359,308 | 100.0 | 0 | 0.0 | 394,651 | 100.0 | 0 | 0.0 |

Source: Reference 2.5-100 and Reference 2.5-101

## Table 2.5-52 Frenchtown Township Water System Pumpage (1995-2001)

| Year | Average Day Demand (Millions of Gallons per Day) | Percent Increase | Maximum Day Demand (Million of Gallons per Day) |
|---|---|---|---|
| 1995 | 1.53 | - | 3.03 |
| 1996 | 1.63 | 6.5 | 3.03 |
| 1997 | 1.66 | 1.8 | 2.47 |
| 1998 | 1.91 | 15.1 | 3.88 |
| 1999 | 2.07 | 8.4 | 3.49 |
| 2000 | 1.97 | -4.8 | 3.38 |
| 2001 | 2.10 | 6.6 | 3.73 |

Source: Reference 2.5-11

## Table 2.5-53 Monroe County Fire Departments (Sheet 1 of 2)

| | Type | Run By | Fire Stations | Career Firefighters | Volunteer Firefighters | Paid per Call Firefighters | Non-Firefighting Employees | Non-Firefighting Volunteers |
|---|---|---|---|---|---|---|---|---|
| Ash Township Volunteer Fire Department | Volunteer | Local | 2 | 0 | 40 | 0 | 0 | 0 |
| Bedford Fire Department #2 | Volunteer | Local | 1 | 0 | 30 | 0 | 0 | 0 |
| Berlin Township Fire Department #2 | Volunteer | Local | 1 | 0 | 0 | 23 | 0 | 0 |
| Dundee Township Fire Department | Volunteer | Local | 1 | 0 | 28 | 0 | 0 | 0 |
| Erie Township Fire Department | Volunteer | Local | 1 | 0 | 22 | 0 | 0 | 0 |
| Estral Beach Fire Department | Volunteer | Local | 1 | 0 | 0 | 15 | 0 | 0 |
| Exeter Fire Department | Volunteer | Local | 1 | 0 | 26 | 0 | 0 | 0 |
| Frenchtown Township Fire Department | Mostly Career | Local | 4 | 22 | 0 | 17 | 1 | 0 |
| LaSalle Township Volunteer Fire Department | Volunteer | Local | 1 | 0 | 0 | 0 | 0 | 0 |
| London - Maybee – Raisinville | Volunteer | Local | 1 | 0 | 21 | 0 | 0 | 0 |
| Milan Area Fire Department | Volunteer | Local | 1 | 0 | 0 | 36 | 1 | 0 |
| Monroe City Fire Department | Career | Local | 3 | 41 | 0 | 0 | 0 | 0 |
| Monroe Township Volunteer Fire Department | Volunteer | Local | 1 | 0 | 0 | 27 | 1 | 0 |
| Morin Point Fire Department | Volunteer | Local | 1 | 0 | 29 | 0 | 0 | 3 |
| Ottawa Lake Volunteer Fire Department | Volunteer | Local | 1 | 0 | 22 | 0 | 0 | 0 |
| Summerfield Township Volunteer Fire Department | Volunteer | Local | 1 | 0 | 0 | 26 | 0 | 0 |

## Table 2.5-53 Monroe County Fire Departments (Sheet 2 of 2)

| | Type | Run By | Fire Stations | Career Firefighters | Volunteer Firefighters | Paid per Call Firefighters | Non-Firefighting Employees | Non-Firefighting Volunteers |
|---|---|---|---|---|---|---|---|---|
| Whiteford Township Volunteer Fire Department | Volunteer | Local | 0 | 0 | 22 | 0 | 0 | 0 |
| **Total** | | | **22** | **63** | **240** | **144** | **3** | **3** |

Source: Reference 2.5-102

## Table 2.5-54 Primary Regional Hospitals and Health Care Facilities (Sheet 1 of 2)

**Wayne County Area (Excluding Detroit)**

| Facility's Name | Address | Phone Number |
|---|---|---|
| Annapolis Hospital | 33155 Annapolis Rd, Wayne | 734-467-4000 |
| Bon Secours Hospital | 468 Cadieux Rd, Grosse Pointe | 313-343-1501 |
| Garden City Osteopathic Hospital | 6245 N. Inkster Rd, Garden City | 734-421-3300 |
| Heritage Hospital | 10000 Telegraph Rd, Taylor | 313-295-5000 |
| Oakwood Hospital | 18101 Oakwood Blvd, Dearborn | 313-593-7000 |
| Redford Community Hospital | 25210 Grand River Ave, Redford | 313-531-6200 |
| Seaway Hospital | 5450 Fort St, Trenton | 313-671-3800 |
| Vencor Hospital-Detroit | 26400 W. Outer Dr, Lincoln Park | 313-386-2000 |
| Annapolis Westland Center | 2345 Merriman Rd, Westland | 734-467-2300 |
| Cottage Hospital | 159 Kercheval Ave, Grosse Pointe Farms | 313-884-8600 |
| Henry Ford Wyandotte Hospital | 2333 Biddle Ave, Wyandotte | 313-284-2400 |
| Oakwood Downriver Medical Center | 25750 W. Outer Dr, Lincoln Park | 313-383-6000 |
| Oakwood Springwells Health Center | 10151 Michigan Ave, Dearborn | 313-436-2400 |
| St. Mary Hospital | 35475 Five Mile Rd, Livonia | 734-464-4800 |
| VA Medical Center | 3415 Southfield Rd, Allen Park | 313-562-6000 |
| | **Detroit** | |
| Children's Hospital of Michigan | 3901 Beaubien St, Detroit | 313-745-0073 |
| Detroit Receiving Hospital | 4201 St. Antoine, Detroit | 313-745-3000 |
| Grace Hospital | 6071 W. Outer Dr, Detroit | 313-966-3300 |
| Harper Hospital | 3990 John Rd, Detroit | 313-745-9375 |
| Hutzel Hospital | 4707 St. Antoine, Detroit | 313-745-7171 |
| Rehabilitation Institute | 261 Mack, Detroit | 313-745-9700 |
| Detroit Riverview Hospital | 7733 E. Jefferson Ave, Detroit | 313-499-3000 |
| Henry Ford Health System | 600 Fisher Building, Detroit | 313-876-8700 |
| Henry Ford Health System | 1 Ford Place, Detroit | 313-874-5005 |
| Henry Ford Hospital | 2799 W. Grand Blvd, Detroit | 313-876-2600 |
| Holy Cross Hospital | 4777 E. Outer Dr, Detroit | 313-369-9100 |

## Table 2.5-54 Primary Regional Hospitals and Health Care Facilities (Sheet 2 of 2)

| Wayne County Area (Excluding Detroit) | | |
|---|---|---|
| **Facility's Name** | **Address** | **Phone Number** |
| Mercy Hospital | 5555 Conner, Detroit | 313-579-4210 |
| Michigan Health Center | 2700 Martin Luther King Dr, Detroit | 313-361-8000 |
| St. John Hospital & Medical Center | 22101 Moross Rd, Detroit | 313-343-7310 |
| Michigan Health Care Corp | 7430 Second Ave, Detroit | 313-874-9110 |
| Mount Carmel Mercy Hospital | 6071 W. Outer Dr, Detroit | 313-927-7000 |
| Saratoga Community Hospital | 15000 Gratiot, Detroit | 313-245-1200 |
| **Toledo** | | |
| St. Vincent Mercy Medical Center | 2213 Cherry St, Toledo | 419-251-3232 |
| Mercy Children's Hospital | 2222 Cherry St, Toledo | 419- 251-8000 |
| St. Anne Mercy Hospital | 3404 W. Sylvania Ave, Toledo | 419- 407-2663 |
| St. Charles Mercy Hospital | 2600 Navarre Ave, Toledo | 419- 696-7200 |
| The Toledo Hospital | 2142 N. Cove Blvd, Toledo | 419- 291-4000 |
| Toledo Children's Hospital | 2142 N. Cove Blvd, Toledo | 419- 291-5437 |
| Flower Hospital | 5200 Harroun Rd, Toledo | 419- 824-1444 |
| Bay Park Community Hospital | 2801 Bay Park Dr, Toledo | 419- 690-7900 |
| Saint Luke's Hospital | 5901 Monclova Rd, Toledo | 419- 893-5911 |
| Medical University of Ohio | 3000 Arlington Ave, Toledo | 419- 383-4000 |
| Hospice of Northwest Ohio | 30000 E. River Rd, Toledo | 419- 661-4001 |
| Hospice of Northwest Ohio | 800 S. Detroit Ave, Toledo | 419- 661-4001 |

Source: Reference 2.5-103 and Reference 2.5-104

## Table 2.5-55 Frenchtown Township and Monroe County Commuter and Resident Destination Table (2000) (Sheet 1 of 2)

| | Frenchtown Township | Workers | Percent | Monroe County | Workers | Percent |
|---|---|---|---|---|---|---|
| **Origin of Workers Employed in Frenchtown Township and Monroe County** | Frenchtown Township | 1,838 | 24.8 | Monroe County | 35,202 | 72.5 |
| | Monroe | 1,520 | 20.5 | Lucas County, OH | 4,456 | 9.2 |
| | Monroe Township | 779 | 10.5 | Wayne County | 4,111 | 8.5 |
| | La Salle Township | 301 | 4.1 | Washtenaw County | 1,085 | 2.2 |
| | Raisinville Township | 261 | 3.5 | Lenawee County | 1,074 | 2.2 |
| | Lucas County, OH | 257 | 3.5 | Oakland County | 565 | 1.2 |
| | Bedford Township | 244 | 3.3 | Wood County, OH | 384 | 0.8 |
| | Ash Township or Carleton | 193 | 2.6 | Macomb County | 235 | 0.5 |
| | Berlin Township (Monroe), Estral Beach, or South Rockwood | 181 | 2.4 | Fulton County, OH | 122 | 0.3 |
| | Exeter Township or Maybee | 143 | 1.9 | Jackson County | 115 | 0.2 |
| | Elsewhere | 1,696 | 22.9 | Elsewhere | 1,177 | 2.4 |
| | **Total** | 7,413 | 100.0 | **Total** | 48,526 | 100.0 |

## Table 2.5-55 Frenchtown Township and Monroe County Commuter and Resident Destination Table (2000) (Sheet 2 of 2)

| | Frenchtown Township | | | Monroe County | | |
|---|---|---|---|---|---|---|
| | | Workers | Percent | | Workers | Percent |
| **Where Residents of Frenchtown Township and Monroe County Work** | Monroe | 2,276 | 23.9 | Monroe County | 35,202 | 51.1 |
| | Frenchtown Township | 1,838 | 19.3 | Lucas County, OH | 12,654 | 18.4 |
| | Monroe Township | 635 | 6.7 | Wayne County | 12,161 | 17.7 |
| | Detroit | 381 | 4.0 | Washtenaw County | 4,587 | 6.7 |
| | Ash Township or Carleton | 329 | 3.5 | Oakland County | 1,256 | 1.8 |
| | Romulus | 286 | 3.0 | Lenawee County | 817 | 1.2 |
| | Dearborn | 261 | 2.7 | Wood County, OH | 778 | 1.1 |
| | Berlin Township (Monroe), Estral Beach, or South Rockwood | 241 | 2.5 | Macomb County | 369 | 0.5 |
| | Lucas County, OH | 240 | 2.5 | Livingston County | 132 | 0.2 |
| | Trenton | 215 | 2.3 | Fulton County, OH | 87 | 0.1 |
| | Elsewhere | 2,816 | 29.6 | Elsewhere | 792 | 1.2 |
| | **Total** | **9,518** | **100.0** | **Total** | **68,835** | **100.0** |

Source: Reference 2.5-48 and Reference 2.5-49

## Table 2.5-56 Transportation Profile for Frenchtown Township & Monroe County (2000)

| | Frenchtown Township | | | | | Monroe County | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Transportation to Work** | **Census 1990** | **Percent** | **Census 2000** | **Percent** | **Percent Change 1990-2000** | **Census 1990** | **Percent** | **Census 2000** | **Percent** | **Percent Change 1990-2000** |
| Drove Alone | 6,843 | 87.0% | 8,381 | 87.9% | 1.0% | 50,793 | 85.4% | 60,671 | 88.1% | 2.8% |
| Carpooled or Vanpooled | 771 | 9.8% | 826 | 8.7% | -1.1% | 5,780 | 9.7% | 5,627 | 8.2% | -1.5% |
| Public Transportation | 31 | 0.4% | 45 | 0.5% | 0.1% | 187 | 0.3% | 285 | 0.4% | 0.1% |
| Walked | 92 | 1.2% | 110 | 1.2% | -0.0% | 1,149 | 1.9% | 704 | 1.0% | -0.9% |
| Other Means | 44 | 0.6% | 47 | 0.5% | -0.1% | 381 | 0.6% | 289 | 0.4% | -0.2% |
| Worked at Home | 88 | 1.1% | 121 | 1.3% | 0.2% | 1,202 | 2.0% | 1,259 | 1.8% | -0.2% |
| **Total** | 7,869 | 100.0% | 9,530 | 100.0% | 0.0% | 59,492 | 100.0% | 68,835 | 100.0% | 0.0% |

Source: Reference 2.5-48 and Reference 2.5-49

**Table 2.5-57 Michigan Department of Transportation Scheduled Projects in Monroe County (2008-2012)**

| Route | Location | Type of Work | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| I-275 | I-275 SB over Telegraph Road (US-24) | Overlay-Deep | Con | | | | |
| I-275 | I-275 NB over Telegraph Road (US-24) | Overlay-Deep | Con | | | | |
| I-275 SB | I-275 SB (RAMP) over I-75 | Overlay-Deep | | | Con | | |
| I-75 | South Huron river Drive over I-75 | Bridge Replacement | Con | | | | |
| I-75 | Sterns Road over I-75 | Bridge Replacement | | Con | | | |
| I-75 | I-75 NB over Plum Creek | Overlay-Deep | | | Con | | |
| I-75 | I-75 SB over Plum Creek | Overlay-Deep | | | Con | | |
| I-75 | I-75 over Industrial Tracks | Overlay-Deep | | | Con | | |
| I-75 | I-75 over Conrail Industrial tracks | Overlay-Deep | | | Con | | |
| I-75 | LaPlaisance Road over I-75 | Overlay-Shallow | | | Con | | |
| I-75 | I-75 over Huron River | Bridge Replacement | Con | | | | |
| US-24 | US-24 over Little Sandy Creek | Culvert Replacement | | | Con | | |

Con-Construction (refers to actual building phase of project)

Source: Reference 2.5-105

## Table 2.5-58 Proposed Transportation Projects within Monroe County (Sheet 1 of 2)

| Project Name | Project Limits | Proposed Work | Legal Jurisdiction | First year of Project |
|---|---|---|---|---|
| Beaches and Tripper | Frenchtown Twp | Operate new bus service | LETC | 2008 |
| New Bedford dial-a-ride | Bedford Twp | Operate new service | LETC | 2008 |
| I-75 | under South River Drive | Replace bridge | MDOT | 2008 |
| I-275 | 2 bridge locations in Monroe County | Deep overlay | MDOT | 2008 |
| I-275 | under Newport Rd | Bridge deck patching | MDOT | 2008 |
| I-75 | over Huron River | Replace bridge | MDOT | 2008 |
| Seventh Street W | Union to Monroe | Curb replacement and resurfacing | Monroe | 2008 |
| Cooper Street | from 7th to Front St | Reconstruct | Monroe | 2008 |
| N Custer | at Custer Drive | Signalize intersection | Monroe | 2008 |
| E Front St | from Conant to I-75 | Resurface | Monroe | 2008 |
| Sterns Road | Lewis Avenue to U.S. 24 | Rehabilitate roadway | Monroe CRC | 2008 |
| Lakeside | From Strausburg to Minx | Rubblizing and resurfacing | Monroe CRC | 2008 |
| Various Roads | Countywide | Rehabilitate roadway | Monroe CRC | 2008 |
| Various Rural Roads | Countywide | Rehabilitate roadway | Monroe CRC | 2008 |
| Various Roads | Countywide | Rehabilitate roadway | Monroe CRC | 2008 |
| Lewis Avenue | from 1,100' N of Sterns to Ann Arbor Railroad track | Resurface road | Monroe CRC | 2008 |
| Wilcox Rd | at S Branch of Nacon Drain | Rehabilitate bridge | Monroe CRC | 2008 |
| Petersburg Rd | over Raisin River | Rehabilitate bridge | Monroe CRC | 2008 |
| Brewer Rd | at Swamp Raisin Ck | Rehabilitate bridge | Monroe CRC | 2008 |
| Newport Rd | Joanne to Swan Creek Rd | Add center left-turn lane | Monroe CRC | 2008 |
| US-24 | over Sandy Creek | Replace bridge | MDOT | 2009 |

## Table 2.5-58 Proposed Transportation Projects within Monroe County (Sheet 2 of 2)

| Project Name | Project Limits | Proposed Work | Legal Jurisdiction | First year of Project |
|---|---|---|---|---|
| I-75 | Sterns Road over I-75 | Bridge Replacement | MDOT | 2009 |
| E Third St | from Front to Monroe | Rehabilitate roadway | Monroe | 2009 |
| Custer Dr | from N Custer to W Elm | Rehabilitate roadway | Monroe | 2009 |
| Bedford Urban Preservation | Various locations | Rehabilitate roadway | Monroe CRC | 2009 |
| Finzel Rd | at Stoney Creek Overflow | Rehabilitate bridge | Monroe CRC | 2009 |
| I-75 | 5 Bridges along I-75 | Rehabilitate bridges | MDOT | 2010 |
| I-275 SB | over I-75 | Rehabilitate roadway | MDOT | 2010 |
| W Seventh St | from Telegraph to Union | Rehabilitate roadway | Monroe | 2010 |
| Scott St | from Sixth to Front | Rehabilitate roadway | Monroe | 2010 |
| E First St | from Winchester to Conant | Rehabilitate roadway | Monroe | 2010 |
| N Custer | at Custer | Install signal | Monroe | 2010 |
| N Custer | at de Lafayette | Install signal | Monroe | 2010 |
| Sumpter Rd | from Oakville Waltz to Colf | Pavement patching | Monroe CRC | 2010 |
| US-24 | from Stewart Road to Mall | Rehabilitate roadway | MDOT | 2011 |
| E Elm | from Monroe to N Dixie | Rehabilitate roadway | Monroe | 2011 |
| N Dixie | from Elm to Spaulding | Rehabilitate roadway | Monroe | 2011 |
| Oakville Waltz Preservation | Various lengths | Rehabilitate road | Monroe CRC | 2011 |

## Table 2.5-59 Minor Airports

| Name | Location | Aircraft Based on Site | Distance from Fermi Site (Miles) | Direction from Fermi Site |
|---|---|---|---|---|
| Newport Woods Airport | Newport, Michigan | 5 | 3 | NW |
| Mills Field | Erie, Michigan | 3 | 3 | N |
| Carls Airport | South Rockwood, Michigan | - | 6 | NNW |
| Wickenheiser Airport | Carleton, Michigan | 3 | 7 | NW |
| Custer Airport | Monroe, Michigan | 39 | 9 | W |
| Gross Ile Municipal Airport | Detroit/Gross Ile, MI | 88 | 11 | NNE |
| Erie Aerodrome | Erie, Michigan | 4 | 18 | SW |
| Toledo Suburban Airport | Lambertville, Michigan | 34 | 25 | SW |
| Gradolph Field Airport | Petersburg, Michigan | 2 | 25 | W |

Source: Reference 2.5-106 through Reference 2.5-114

## Table 2.5-60 Regional Ports

| | Company | Berths | Depth (feet) | Length (feet) |
|---|---|---|---|---|
| Port of Monroe | | 1 | 18 | 1,000 |
| | | 1 | 21 | 1,500 |
| Port of Detroit | DSC Ltd. | 1 | 26.5 (Seaway Depth) | 900 |
| | Detroit marine Terminals | - | 27 (Seaway depth) | 2,100 |
| | Nicholson Terminal and Dock Company | - | 27 (Seaway depth) | 3,400 |
| | Michigan Marine Terminal: Rouge River | 1 | Seaway depth | 650 |
| | Hickman Williams and Company | 1 | | |
| | Motor City Intermodal Distributio | 1 | 28 (Seaway depth) | 500 |
| Port of Toledo | The Andersons, Kuhlman Drive facility | 1 | 28 | 1,000 |
| | ADM Grain Company | 2 | 28 | 800 |
| | The Andersons, Edwin Drive Facility | 1 | 28 | 1,030 |
| | CSX Transportation/Toledo Docks | 4 | 27 | 1,000 to 1,500 |
| | Midwest Terminals of Toledo International | 7 | 28 | 4,100 |
| | Kuhlman Corporation | 1 | 28 | 600 + |

## Table 2.5-60 Regional Ports

| | Company | Berths | Depth (feet) | Length (feet) |
|---|---|---|---|---|
| Port of Windsor | Canadian Salt Company | T dock | 26 | 730 |
| | Windsor grain Terminal: ADM-Agri Industries | 1 | 29 | 1,300 |
| | Modern Limited | 1 plus 1 wharf | Full Seaway Depth | 2,400 |
| | Canadian Maritime Ltd. | Drive on/off truck ferry ramps | - | - |
| | Southwestern Sales West Location | 1 | Full Seaway Depth | 1,400 |
| | Sterling | 1 | 27 | 1,000 |
| | Marine Fuels | - | 27 | 1,000 |
| | Canada Building Materials | - | Full Seaway Depth | 736 |
| | LaFrage Construction Materials | - | Full Seaway Depth | 1,100 |
| | Dieppe Dock | - | - | 1,200 |
| | Ford Motor Company Dock | - | - | 1,800 |
| | Southwestern Sales East Location | - | Full Seaway Depth | 700 |
| | Essroc Italcementi Group and the Dunn Group | - | 26 | 1,000 |

Source: Reference 2.5-115 through Reference 2.5-118

## Table 2.5-61 Monroe County Tourist Attractions

| Name/address | Brief Description |
|---|---|
| Eby Log Cabin<br>Monroe County Fairgrounds<br>Monroe, MI 48161 | A wood log cabin constructed by Alsace emigrants John and Elizabeth Eby and family, in 1859. |
| Farmer Charlie's Maze Adventures & Haunted Hayride<br>6421 N. Stony Creek Rd<br>Monroe, MI 48161 | A fall attraction that offers food, maze exploration, hayrides, and a pumpkin patch. |
| Holtz Christmas Tree Plantation<br>9381 Day Road<br>Monroe, MI 48162 | A winter attraction offering patrons the chance to cut their own Christmas Tree. |
| Martha Barker Country Store Museum<br>3815 N. Custer Road<br>Monroe, MI 48162 | A replica of a common country store circa 1918. The exhibits are authentic, with artifacts donated by local families and businesses. |
| Monroe County Historical Museum & The George A. Custer Exhibits<br>126 S. Monroe Street<br>Monroe, MI 48161 | The museum houses a large collection of 18th & 19th century artifacts relating to Southeast Michigan. |
| Monroe County Labor History Museum<br>41 W. Front St.<br>Downtown<br>Monroe , MI 48161 | The Museum illustrates the importance of Monroe County to the American labor movement. |
| Monroe County Vietnam Veterans Historical Museum<br>North Dixie Highway<br>Norman Heck Park<br>Monroe, MI 48162 | The historical museum is staffed by actual Vietnam Veterans that tell their story. |
| Monroe Multi-Sports Complex<br>333 N. Dixie Hwy.<br>I-75 Exit 15<br>Monroe, MI 48162 | The facility offers public skating & drop-in hockey. |
| Navarre-Anderson Trading Post<br>3775 North Custer Road<br>Monroe, MI 48162 | The Trading Post complex is set up to represent a French pioneer homestead along the River Raisin. |

## Table 2.5-61 Monroe County Tourist Attractions

| Name/address | Brief Description |
|---|---|
| Old Town Golf and Sportland<br>6724 N. Monroe Street<br>Monroe, MI 48162 | Consists of a par 3 golf course, driving range, batting cages, miniature golf, and putting green. |
| River Raisin Battlefield Visitor Center<br>1403 East Elm Avenue<br>Monroe, MI 48162 | Contains displays, and full-size British & American soldiers, as well as a fiber-optic map presentation on the Battle of the River Raisin. |

Source: Reference 2.5-119

## Table 2.5-62 Archaeological Sites Located Within Two Miles of Fermi 3

| Number | Name | Period | NRHP Status |
|---|---|---|---|
| 20MR207 | Holmquist M-33 | Prehistoric | Unevaluated |
| 20MR702 | Fermi II | Prehistoric | Unevaluated |
| 20MR703 | Gustafson | Archaic period | Unevaluated |
| 20MR746 | Webb | Nineteenth Century | Unevaluated |

## Table 2.5-63 NRHP-Listed and NRHP-Eligible Above-ground Resources within 10 Miles of Fermi 3

| Name | City or Township/County | Date Listed on the NRHP or Determined Eligible for Listing on the NRHP |
|---|---|---|
| Custer, George Armstrong Equestrian Monument | Monroe/Monroe | 12/9/1994 (L)[1] |
| Detroit River Light Station | Rockwood vicinity/Monroe | 8/4/1983 (L) |
| East Elm – North Macomb Street Historic District | Monroe/Monroe | 5/6/1982 (L) |
| Gibraltar Road Bridge | Gibraltar/Wayne | 09/29/1995 (E)[2] |
| Horse Island Drive Bridge | Gibraltar/Wayne | 1992 (E) |
| Horse Island Drive Bridge | Gibraltar/Wayne | 07/01/1992 (E) |
| Horse Island Drive Bridge | Gibraltar/Wayne | 07/01/1992 (E) |
| I-75 Bridge | Monroe/Monroe | 04/12/2004 (E) |
| Jefferson Avenue Bridge | Brownstown Twp/Wayne | 2/10/2000 (L) |
| Loranger, Edward, House | Monroe vicinity/Monroe | 5/31/1984 (L) |
| McClelland, Governor Robert House | Monroe/Monroe | 9/3/1971 (L) |
| Monroe Armory | Monroe/Monroe | 11/07/2002 (E) |
| Navarre-Anderson Trading Post | Monroe/Monroe | 7/31/1972 (L) |
| Nims, Rudolph House | Monroe/Monroe | 10/18/1972 (L) |
| Old Village Historic District | Monroe/Monroe | 5/6/1982 (L) |
| St. Mary’s Academy Historic District | Monroe/Monroe | 1981 (E) |
| Saint Mary’s Church Complex | Monroe/Monroe | 5/6/1982 (L) |
| Sawyer House | Monroe/Monroe | 11/23/1977 (L) |
| South Pointe Drive Bridge | Grosse Ile/Wayne | 3/15/2000 (L) |
| Weis Manufacturing Company | Monroe/Monroe | 10/26/1981 (L) |
| --- | Frenchtown Twp/Monroe | 11/09/1995 (E) |
| --- | Frenchtown Twp/Monroe | 11/18/1998 (E) |

Notes:
1. L – Listed on the NRHP
2. E – Determined Eligible for listing on the NRHP

## Table 2.5-64 Previously Recorded Archaeological Sites within 1.5 Miles of the Proposed Project Area (Sheet 1 of 3)

| Name/Number | Period | NRHP Status |
|---|---|---|
| 20WA367 | Prehistoric | Not Eligible |
| 20WA368 | Late Nineteenth Century, Early Twentieth Century | Not Eligible |
| 20WA369 | Mid-Twentieth Century | Not Eligible |
| 20WA210 | Prehistoric | Not Eligible |
| 20WA207 | Prehistoric | Not Eligible |
| 20WA208 | Prehistoric | Not Eligible |
| 20WA209 | Early Archaic | Not Eligible |
| 20WA192 | Middle Woodland | Unevaluated |
| 20WA193 | Prehistoric | Unevaluated |
| 20WA194 | Early Archaic, Late Archaic | Unevaluated |
| 20WA206 | Late Woodland | Not Eligible |
| 20WA211 | Nineteenth Century | Not Eligible |
| 20WA41 | Prehistoric | Unevaluated |
| David Brooks House | Nineteenth Century | Unevaluated |
| D.E. Morey’s House | Nineteenth Century | Unevaluated |
| 20WN172 | Woodland | Unevaluated |
| 20WN173 | Prehistoric | Unevaluated |
| 20WN128 | Prehistoric | Unevaluated |
| 20WN129 | Prehistoric | Unevaluated |
| A. Anderson’s House | Nineteenth Century | Unevaluated |
| St. John’s House | Nineteenth Century | Unevaluated |
| 20WN928[‡] | Prehistoric | Not Eligible |
| 20WN929 | Prehistoric | Not Eligible |
| 20WN930 | Prehistoric | Not Eligible |
| 20WN927[‡] | Woodland | Not Eligible |
| 20WN961 | Late Woodland | Not Eligible |
| 20WN972[‡] | Late Woodland | Not Eligible |
| 20WN973[‡] | Prehistoric | Not Eligible |

## Table 2.5-64 Previously Recorded Archaeological Sites within 1.5 Miles of the Proposed Project Area (Sheet 2 of 3)

| Name/Number | Period | NRHP Status |
|---|---|---|
| 20WN974 | Prehistoric | Not Eligible |
| 20WN975 | Prehistoric | Not Eligible |
| 20WN976‡ | Late Woodland | Not Eligible |
| 20WN1034 | Prehistoric | Not Eligible |
| 20WN1035 | Prehistoric | Not Eligible |
| 20WN1036 | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN1037 | Nineteenth Century, Twentieth Century | Unevaluated |
| 20WN1038 | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN1039 | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN1040 | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN1041 | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN1042 | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN1043‡ | Nineteenth Century, Twentieth Century | Not Eligible |
| 20WN130 | Woodland | Unevaluated |
| 20WN931 | Twentieth Century | Not Eligible |
| 20WN932 | Prehistoric | Not Eligible |
| 20WN933 | Prehistoric | Not Eligible |
| 20WN934 | Late Woodland | Not Eligible |
| 20WN935 | Prehistoric | Not Eligible |
| 20WN936 | Nineteenth Century | Not Eligible |
| 20WN937 | Late Woodland | Not Eligible |
| 20WN938 | Prehistoric | Not Eligible |
| 20WN939 | Prehistoric | Not Eligible |
| 20WN940 | Prehistoric | Not Eligible |
| 20WN941 | Prehistoric | Not Eligible |
| 20WN942 | Prehistoric | Not Eligible |
| 20WN943 | Prehistoric | Not Eligible |
| 20WN944 | Prehistoric, Historic | Not Eligible |
| 20WN946 | Prehistoric | Not Eligible |

## Table 2.5-64 Previously Recorded Archaeological Sites within 1.5 Miles of the Proposed Project Area (Sheet 3 of 3)

| Name/Number | Period | NRHP Status |
|---|---|---|
| 20WN947 | Prehistoric | Not Eligible |
| 20WN948 | Prehistoric | Not Eligible |
| 20WN949 | Late Archaic, Late Woodland | Not Eligible |
| 20WN950 | Prehistoric | Not Eligible |
| 20WN951 | Prehistoric | Not Eligible |
| 20WN952 | Prehistoric | Not Eligible |
| 20WN953 | Prehistoric | Not Eligible |
| 20WN954 | Prehistoric | Not Eligible |
| 20WN955 | Prehistoric | Not Eligible |
| 20WN956 | Prehistoric | Not Eligible |
| 20WN957 | Prehistoric | Not Eligible |
| 20WN958 | Late Archaic | Not Eligible |
| 20WN959 | Prehistoric | Not Eligible |
| 20WN960 | Prehistoric | Not Eligible |
| Butler’s House | Nineteenth Century | Unevaluated |
| Richards House | Nineteenth Century | Unevaluated |
| 20WN246 | Prehistoric | Unevaluated |
| 20WN247 | Prehistoric | Unevaluated |
| 20MR190 | Prehistoric | Unevaluated |
| 20MR497 | Prehistoric | Unevaluated |

‡ Site crossed by the Sumpter-Post Road junction to Milan substation transmission line route

## Table 2.5-65 Minority and Low-Income Community Block Group (CBG) Populations within the 50-mi Region

| County | Total CBGs | Minority CBGs | Percent Minority | Low-Income CBGs | Percent Low-Income |
|---|---|---|---|---|---|
| Jackson County, MI | 7 | 0 | 0.00 | 0 | 0.00 |
| Lenawee County, MI | 72 | 4 | 5.56 | 1 | 1.39 |
| Livingston County, MI | 64 | 1 | 1.56 | 0 | 0.00 |
| Macomb County, MI | 539 | 10 | 1.86 | 5 | 0.93 |
| Monroe County, MI | 126 | 1 | 0.79 | 1 | 0.79 |
| Oakland County, MI | 720 | 129 | 17.92 | 20 | 2.78 |
| Washtenaw County, MI | 260 | 47 | 18.08 | 33 | 12.69 |
| Wayne County, MI | 2125 | 1124 | 52.89 | 428 | 20.14 |
| Erie County, OH | 48 | 7 | 14.58 | 3 | 6.25 |
| Fulton County, OH | 18 | 0 | 0.00 | 0 | 0.00 |
| Henry County, OH | 3 | 0 | 0.00 | 0 | 0.00 |
| Lucas County, OH | 433 | 113 | 26.10 | 71 | 16.40 |
| Ottawa County, OH | 39 | 0 | 0.00 | 0 | 0.00 |
| Sandusky County, OH | 57 | 2 | 3.51 | 1 | 1.75 |
| Seneca County, OH | 8 | 0 | 0.00 | 0 | 0.00 |
| Wood County, OH | 77 | 0 | 0.00 | 9 | 11.69 |
| Michigan CBGs[1] | 3913 | 1316 | 33.63 | 488 | 12.47 |
| Ohio CBGS[2] | 683 | 122 | 17.86 | 84 | 12.30 |
| Total | 4596 | 1438 | 31.29 | 572 | 12.45 |

Notes:
1. The CBG count is only for the part of Michigan that lies within the 50-mile radius of Fermi 3.
2. The CBG count is only for the part of Ohio that lies within the 50-mile radius of Fermi 3.

## Table 2.5-66 Michigan and Ohio Population, by Race (2000)

| | Total Population | White | Black or African American | American Indian and Alaska Native | Asian | Native Hawaiian and other Pacific Is. | Hispanic or Latino (of any race) | Some Other Race/Two or More Races | Percent Minority |
|---|---|---|---|---|---|---|---|---|---|
| Michigan | 9,938,444 | 7,806,691 | 1,412,742 | 58,479 | 176,510 | 2692 | 323,877 | 157,453 | 21.45 |
| Ohio | 11,353,140 | 9,538,111 | 1,301,307 | 24,486 | 132,633 | 2749 | 217,123 | 136,731 | 15.99 |

## Table 2.5-67 Low-Income Populations in Michigan and Ohio

**Poverty Status in 1999**

| | Total Population | Families | Individuals | Percent of Individuals in Poverty | Percent of Families in Poverty |
|---|---|---|---|---|---|
| Michigan | 9,938,444 | 192,376 | 1,021,605 | 10.5 | 7.4 |
| Ohio | 11,353,140 | 235,026 | 1,170,698 | 10.6 | 7.8 |

## Table 2.5-68 Regional Migrant Labor Statistics

| | Farms with Hired Labor | Migrant Labor on Farms with Hired Labor | Percentage of Farms with Migrant Labor |
|---|---|---|---|
| Michigan Counties | | | |
| Monroe | 268 | 35 | 13.1 |
| Wayne | 52 | 5 | 9.6 |
| Jackson | 185 | 18 | 9.7 |
| Lenawee | 232 | 7 | 3.0 |
| Livingston | 180 | 0 | 0.0 |
| Macomb | 118 | 27 | 22.9 |
| Oakland | 170 | 4 | 2.4 |
| St. Clair | 253 | 13 | 5.1 |
| Washtenaw | 246 | 5 | 2.0 |
| Michigan | 12,279 | 1412 | 11.5 |
| Ohio Counties | | | |
| Lucas | 136 | 24 | 17.7 |
| Erie | 75 | 10 | 13.3 |
| Fulton | 211 | 7 | 3.3 |
| Henry | 123 | 10 | 8.1 |
| Ottawa | 95 | 18 | 19.0 |
| Sandusky | 207 | 12 | 5.8 |
| Seneca | 127 | 5 | 3.9 |
| Wood | 240 | 9 | 3.8 |
| Ohio | 16,585 | 518 | 3.1 |

Source: Reference 2.5-126 and Reference 2.5-127

## Table 2.5-69 Summary of Fermi Ambient Sound Level Survey Results (Sheet 1 of 2)

| Receptor | Latitude / Longitude Location Description | Approximate Distance to Fermi 2 | Ambient Sound Levels: Lowest $L_{90}$ / Time | Ambient Sound Levels: $L_{dn}$ (24-hour)[1] | Noise Sources Observed |
|---|---|---|---|---|---|
| NML-1 | 41°56‘48.552“N / 83°15‘33.696“W In ROW across from residence at 6108 Pointe aux Peaux Road | 1.05 mi | 34 dBA / 0:00 hour (see Figure 2.5-34) | 54 dBA | Distant highway traffic, dogs barking, local traffic, Fermi plant faintly audible |
| NML-2 | 41°58‘4.116“N / 83°16‘5.340“W Fermi site fenceline at intersection of Fisher Street and Langton Road; approx. 180 m southeast of residence on Langton Road | 0.50 mi | 32 dBA / 0:00 hour (see Figure 2.5-34) | 62 dBA | Birds, distant highway traffic, train, brief distant gunfire from Fermi firing range, Fermi cooling towers faintly audible |
| NML-3 | 41°58‘55.416“N / 83°16‘1.956“W In ROW across from residence at 5735 Trombley Road | 1.06 mi | 32 dBA / 1:00 hour (see Figure 2.5-34) | 63 dBA | Train, birds, distant highway traffic, brief distant gunfire from Fermi firing range, Fermi plant faintly audible during nighttime measurements |
| NML-4 | 41°57‘1.800“N / 83°16‘52.428“W On Brest Road west of residences on Sycamore Road | 1.43 mi | 40 dBA / 0:30 | Not measured | Distant highway traffic, birds, wind chimes, train, Fermi plant faintly audible |
| NML-5 | 41°57‘33.732“N / 83°16‘51.780“W On Toll Road east of Fermi site; approx. 140 m southwest of residence | 1.16 mi | 39 dBA / 18:25 | Not measured | Distant highway traffic, coyotes, dogs, birds, Fermi plant not audible during survey |
| NML-6 | 41°58‘9.516“N / 83°16‘47.604“W Transmission line noise measurement on Leroux Road, approx. 100 m northeast of intersection with Enrico Fermi Drive | 1.10 mi | 42 dBA / 1:05[2] | Not measured | Distant highway traffic, faint transmission line noise, Fermi plant not audible |

## Table 2.5-69 Summary of Fermi Ambient Sound Level Survey Results (Sheet 2 of 2)

| Receptor | Latitude / Longitude Location Description | Approximate Distance to Fermi 2 | Ambient Sound Levels: Lowest $L_{90}$ / Time | Ambient Sound Levels: $L_{dn}$ (24-hour)[1] | Noise Sources Observed |
|---|---|---|---|---|---|
| NML-7 | 41°58‘45.840“N / 83°15‘18.468“W Outside the Swan Boat Club on Brancheau Road north of Fermi site | 0.72 mi | 37 dBA / 17:06 | Not measured | Transformer hum (from boat club unit), dogs, distant highway traffic, brief gunfire from Fermi firing range, wind noise from overhead transmission lines, flag pole rattle, Fermi 2 cooling towers audible during survey |

Notes:

1. Based on hourly measurements from approximately 3:00 a.m. on November 27, 2007 until 3:00 a.m. on November 28, 2007.
2. Nighttime measurement only at this location.

## Table 2.5-70 Fermi 2 Property Tax History

| Year | Plant Property Taxes | Nuclear Fuel Property Taxes | Total Property Taxes |
|---|---|---|---|
| 2007 | 17,806,833 | 1,251,114 | 19,057,947 |
| 2006 | 18,742,125 | 1,271,056 | 20,013,181 |
| 2005 | 20,961,668 | 1,889,733 | 22,851,401 |
| 2004 | 23,112,014 | 1,499,404 | 24,611,418 |
| 2003 | 25,093,888 | 1,109,558 | 26,203,446 |
| 2002 | 27,864,577 | 1,641,822 | 29,506,399 |
| 5 Year Total | 133,581,105 | 8,662,687 | 142,243,792 |

## Table 2.5-71 Frenchtown Charter Township 2007 Millage Composition

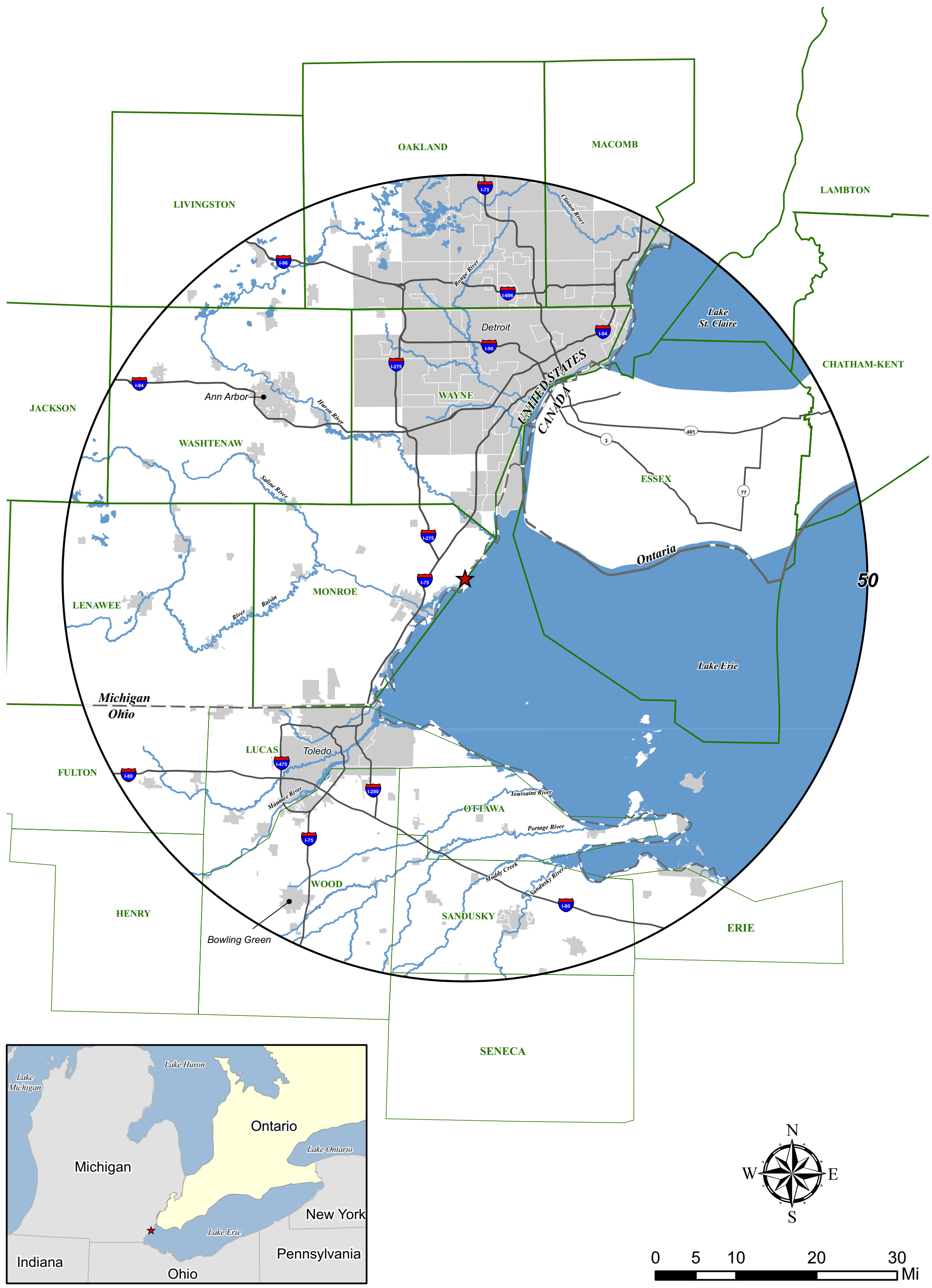
| County | | School Districts | Homestead | Non-Homestead |
|---|---|---|---|---|
| Summer Allocated | 4.7952 | Monroe Schools | | |
| Winter Allocated | 0.0000 | State Education (Summer) | 6.0000 | 6.0000 |
| Jail Bond | | Operating | | 18.0000 |
| Senior Citizen | 0.5000 | Building & Site | 0.9985 | 0.9985 |
| Total County: | 5.2952 | Total Monroe Schools: | 6.9985 | 24.9985 |
| Monroe I.S.D. | | Airport Schools | | |
| Tech. Enhancement | 0.9866 | State Education (Summer) | 6.0000 | 6.0000 |
| Allocated | 0.2897 | Operating | | 18.0000 |
| Voled Operating | 3.4778 | Building & Site | 1.8282 | 1.8282 |
| Total I.S.D: | 4.7541 | Total Airport Schools: | 7.8262 | 25.8282 |
| Monroe County Community College | | Jefferson Schools | | |
| Allocated | 1.2108 | State Education (Summer) | 6.0000 | 6.0000 |
| Operating | 0.9686 | Operating | | 18.0000 |
| Total MCCC: | 2.1794 | Total Jefferson Schools: | 6.0000 | 24.0000 |
| Frenchtown Township | | | | |
| Operating | 2.7166 | | | |
| Water Debt | 1.5000 | Resort Authority | | 2.8154 |
| Lake Erie Transit | 0.4733 | | | |
| Fire Department | 2.0000 | | | |
| Total FT Township: | 6.6699 | | | |
| | | | | |
| Monroe County Library | 1.0000 | | | |
| | | | | |
| Total without school or Resort | 19.9186 | | | |

## Table 2.5-72 Average Direct and Indirect Taxes and Capital Expenditures for Fermi 2 (2002-2007)

| O&M Expenditures | 2002-2007 Averages ($)(4) | Estimated Direct Sales Tax ($)(4) | Estimated Indirect Sales Tax ($)(4) |
|---|---|---|---|
| Detroit Edison Labor | 62,092 | 0 | 2,235 (1) |
| Contract Labor | 33,267 | 0 | 1,198 (1) |
| Material & Equipment | 10,496 | 315 (2) | 0 |
| Dues & Assessments | 8,188 | $0 | 0 |
| Outage Levelization | 6,004 | 90 (2)(3) | 108 (1)(3) |
| Other Direct Resources | 2,229 | 0 | 0 |
| Accounting | -53 | 0 | 0 |
| Employee Benefits | 43,006 | 0 | 0 |
| Total O&M | 165,228 | | |
| | | | |
| Capital Expenditures | | | |
| Total Capital | 49,950 | 749 (2)(3) | 899 (1)(3) |
| Totals | | 1,154 | 4440 |

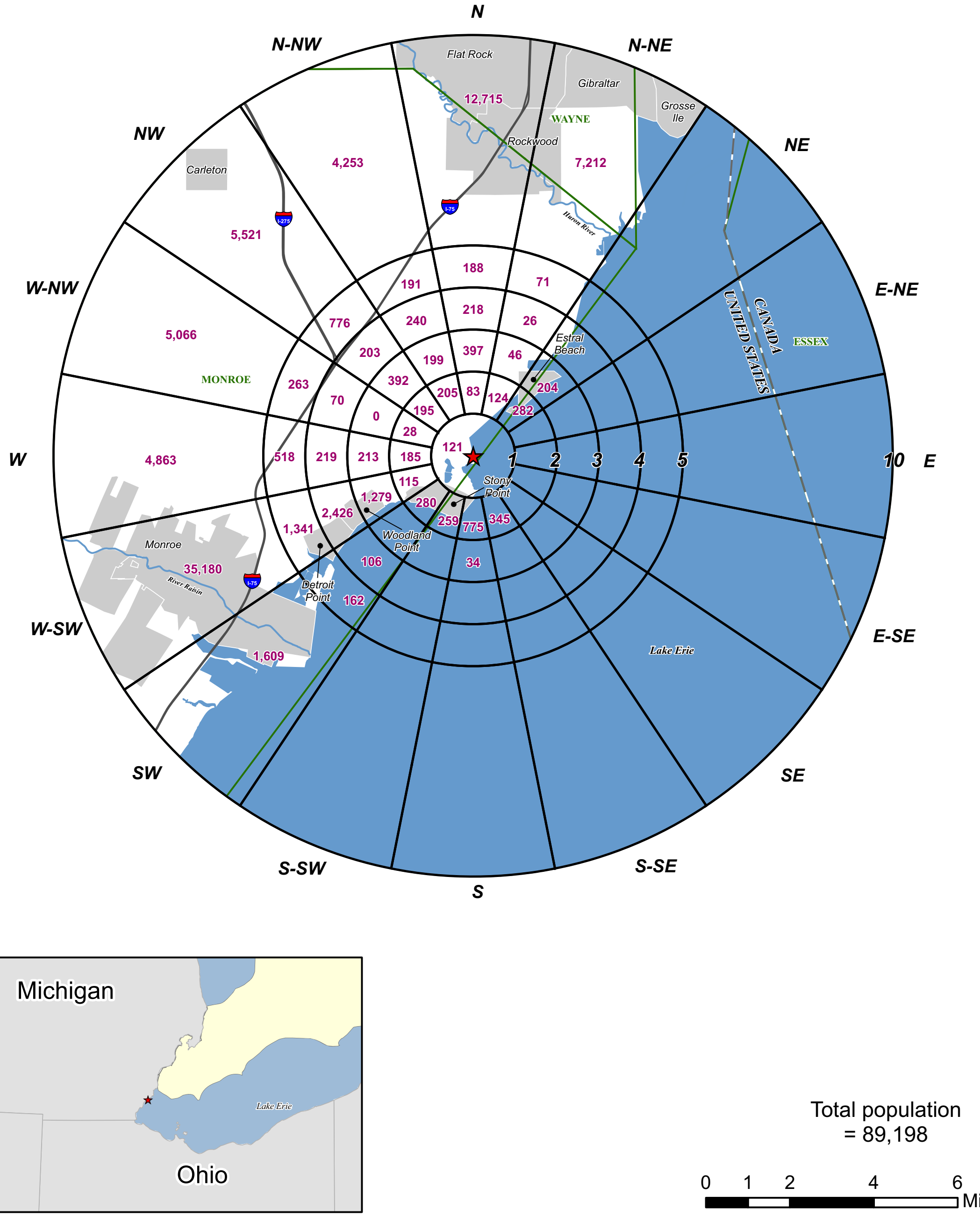
Notes:
1. Assumes 60% of labor costs are subject to Michigan/Ohio sales taxes.
2. Assumes 50% of material & equipment are subject to Michigan/Ohio sales taxes.
3. Assumes costs are 50% labor costs and 50% material & equipment costs.
4. Thousands of dollars.

**Figure 2.5-1 United States and Canadian Counties Wholly or Partly within a 50-mi Radius of Fermi 3 (latitude: 41º 57’ 39” N, longitude: 83º 15’ 43” W)**



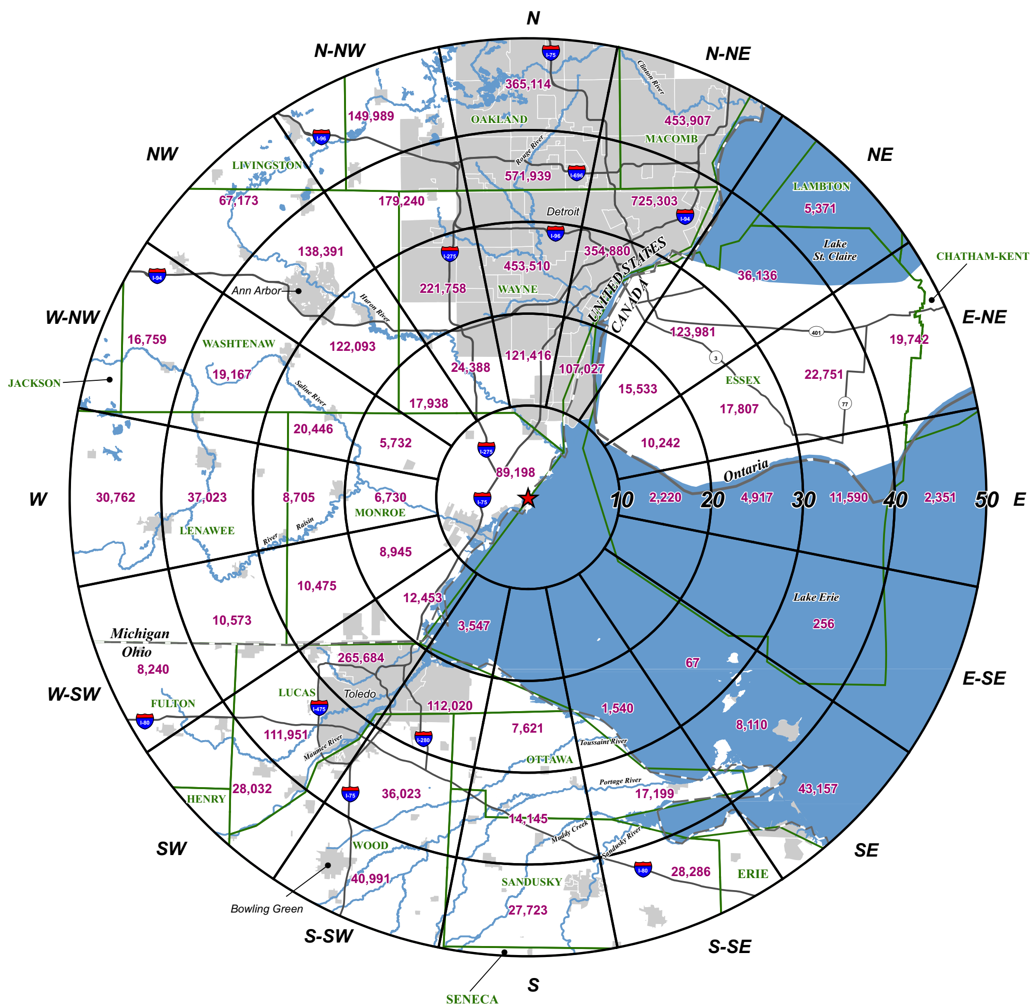

Source: Reference 2.5-4

**Figure 2.5-2 Resident Population Distribution by Segment, 0 to 10 Miles (Segmented Concentric Circles) From Fermi 3 (2000)**




Source: Reference 2.5-4

**Figure 2.5-3 Resident Population Distribution by Segment, 0 to 50 Miles (Segmented Concentric Circles) From Fermi 3 (2000)**



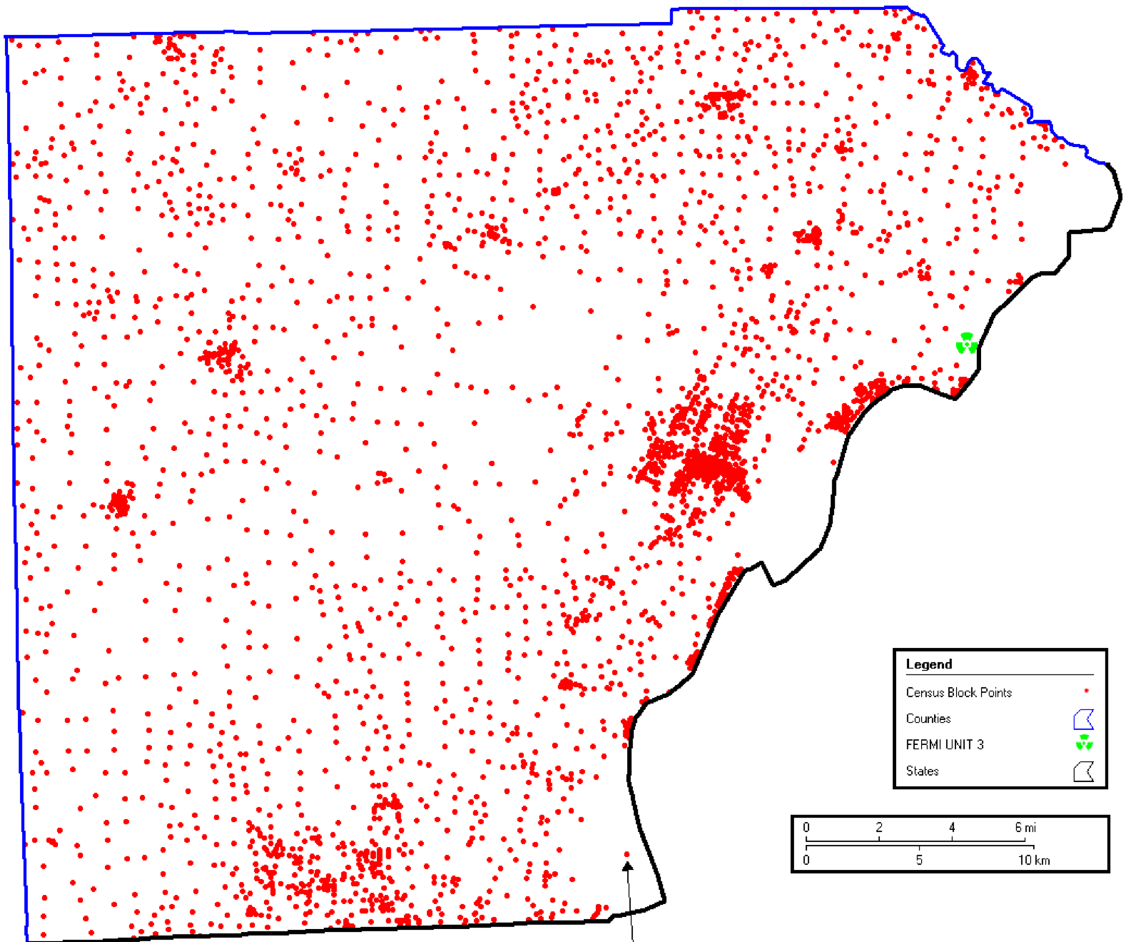


Total population = 5,378,266

0 5 10 20 30 Mi

Source: Reference 2.5-4

## Figure 2.5-4 Census Block Points within Monroe County, MI

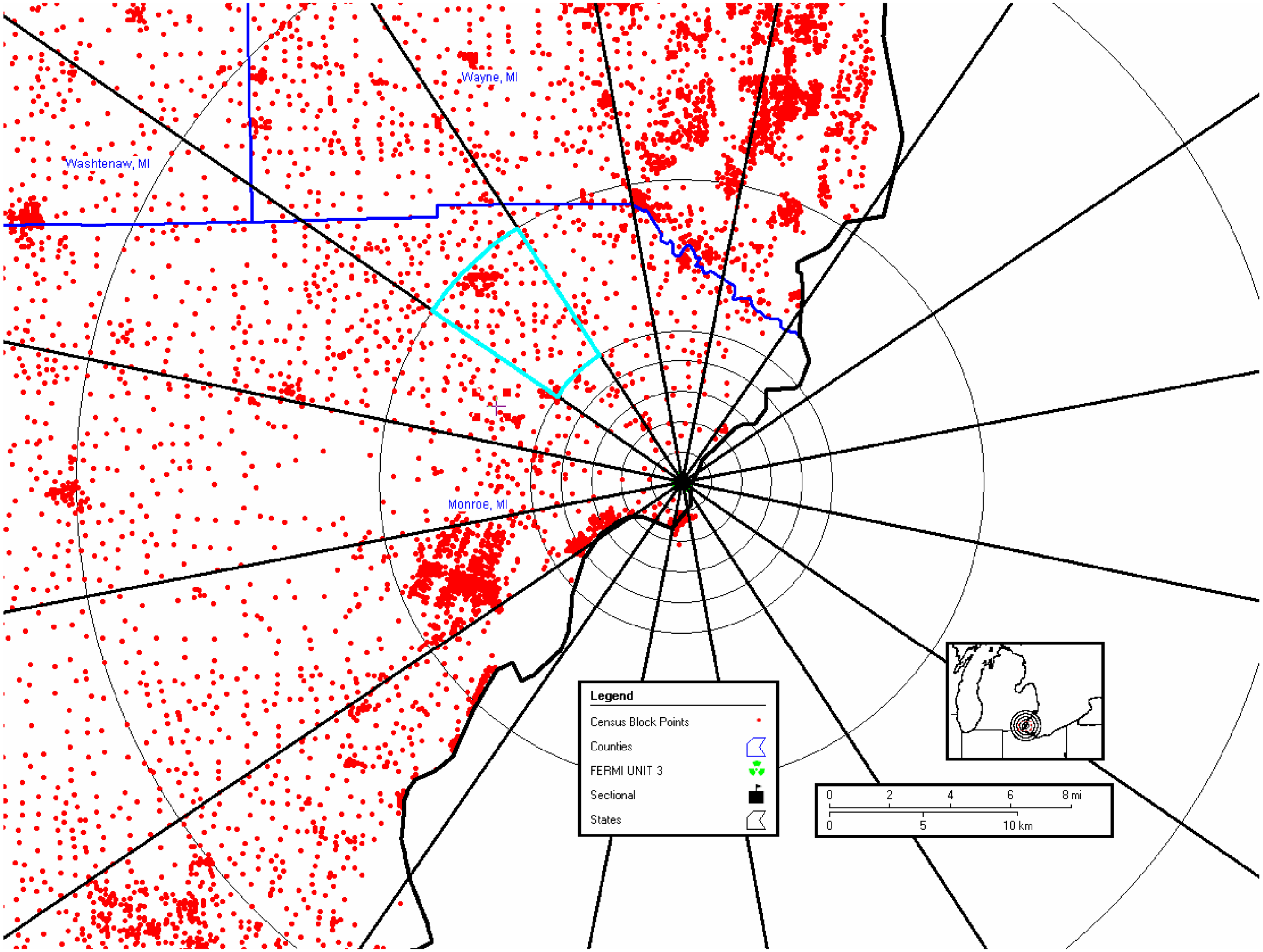



Census 2000 Census Block Data

| ST-CNTY-TRACT-BLOCK | Total Population | Housing Units | White | Black or African American | American Indian and Alaska Native | Asian | Native Hawaiian and other Pacific Islander | Some other race | Two or more races | Hispanic or Latino of any race |
|---|---|---|---|---|---|---|---|---|---|---|
| 26-115-8337.00-2039 | 11 | 3 | 8 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |

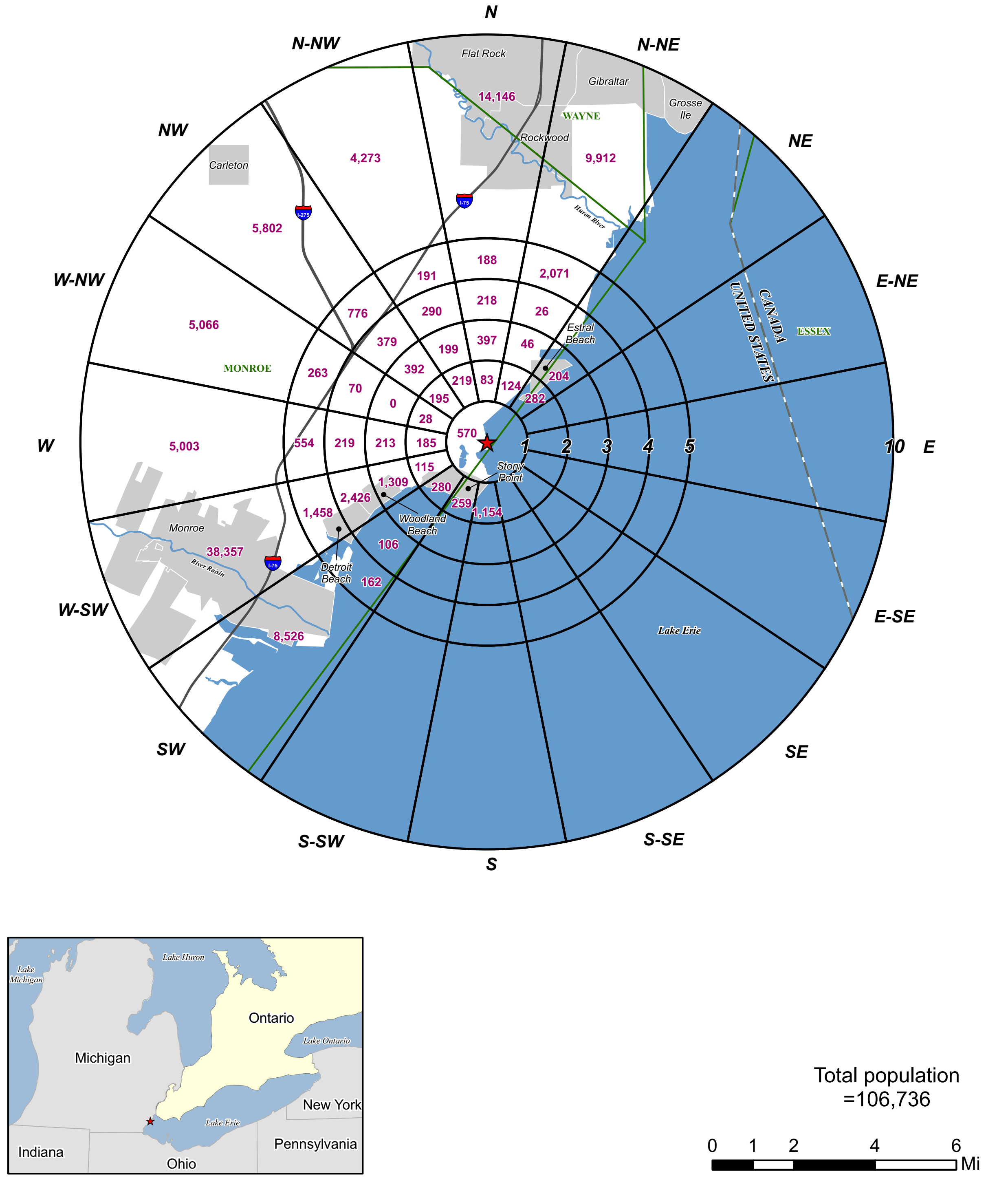
Source: Reference 2.5-4

**Figure 2.5-5 Census Block Points within Each Segment**

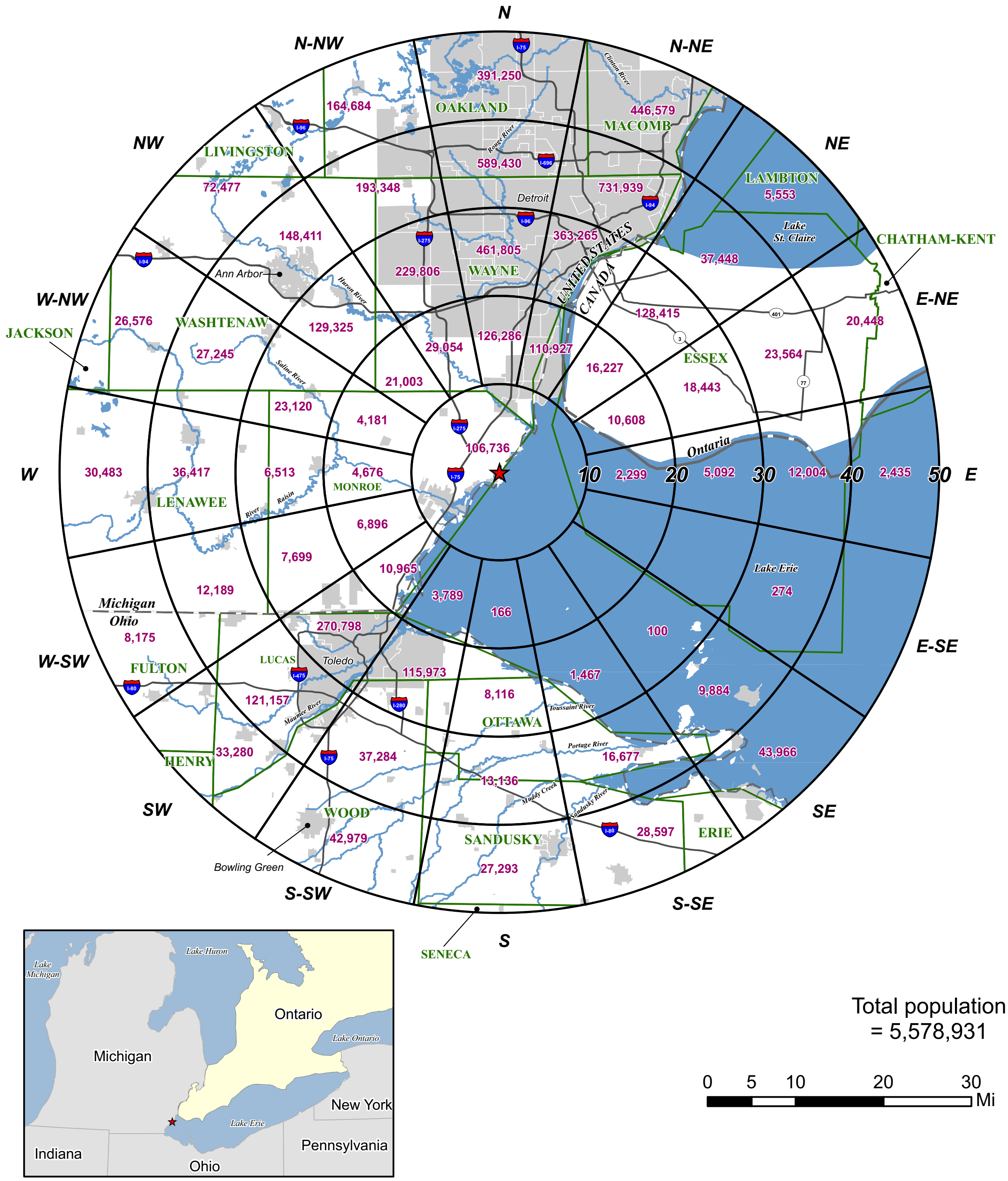



Source: Reference 2.5-4

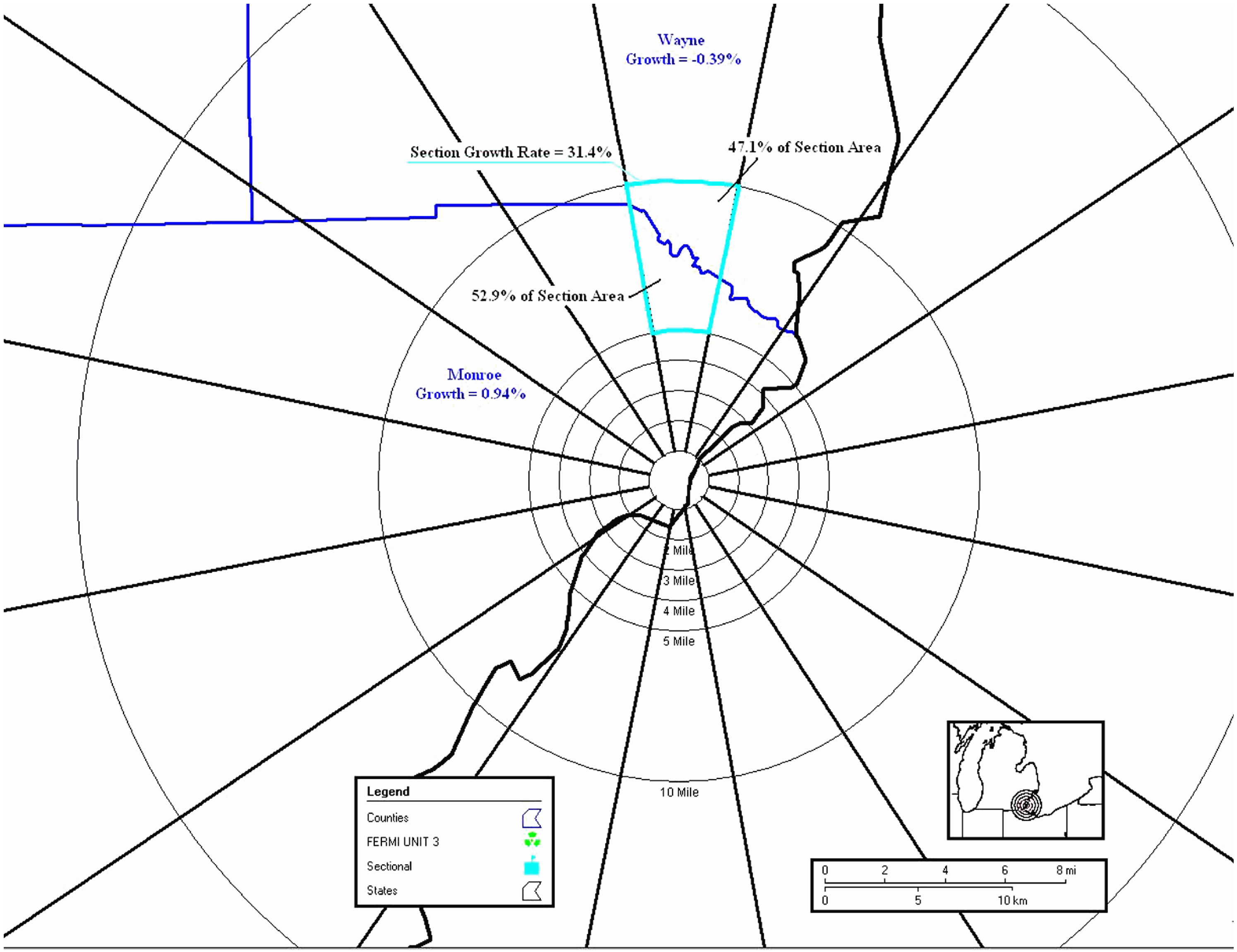
**Figure 2.5-6 Resident and Transient Population Distribution by Segment, 0 to 10 Miles (Segmented Concentric Circles) From Fermi 3 (2000)**



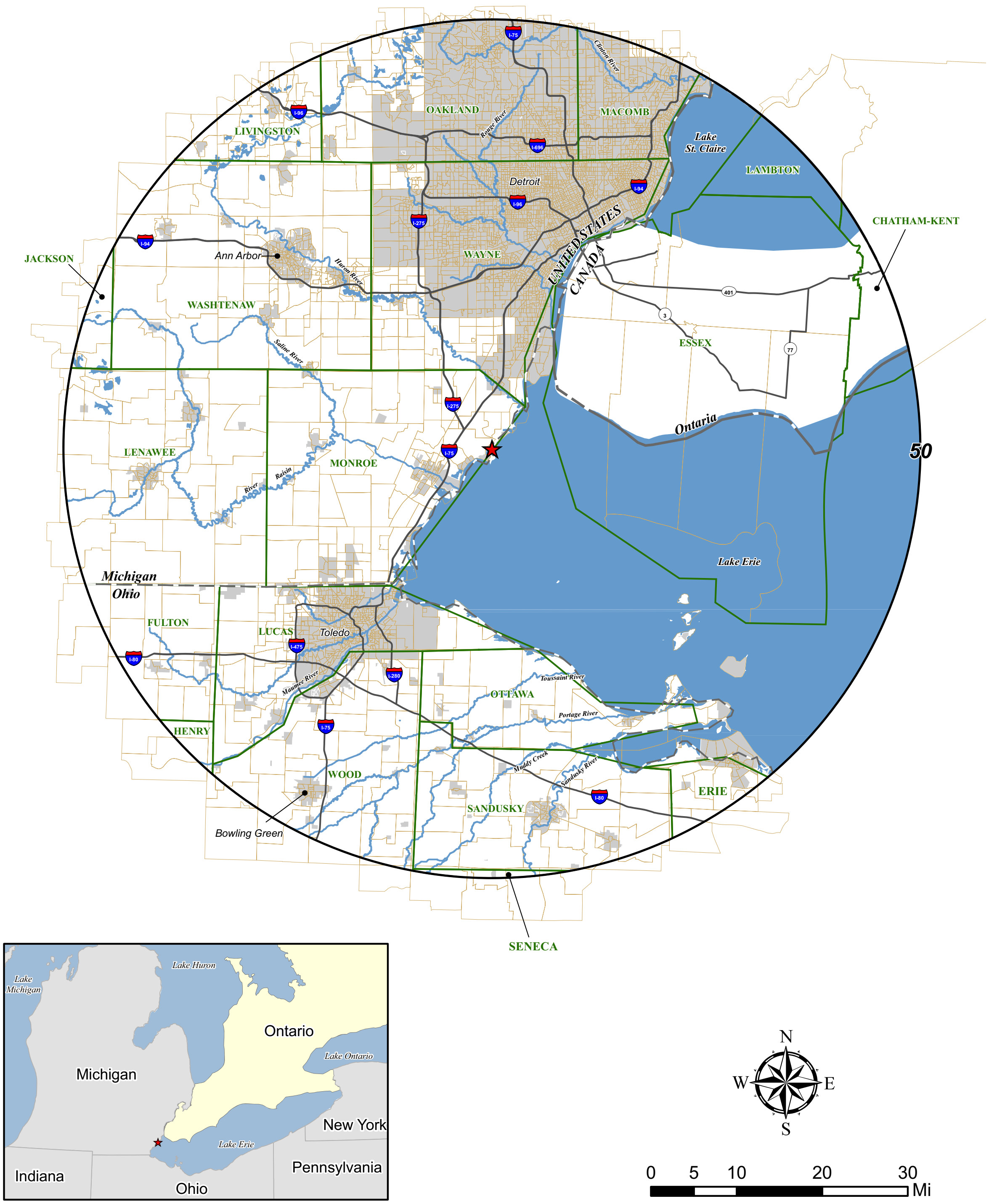
## Figure 2.5-7 Resident and Transient Population Distribution by Segment, 0 to 50 Miles (Segmented Concentric Circles) From Fermi 3 (2000)



## Figure 2.5-8 Example: Sectional Population Growth Rate Calculation

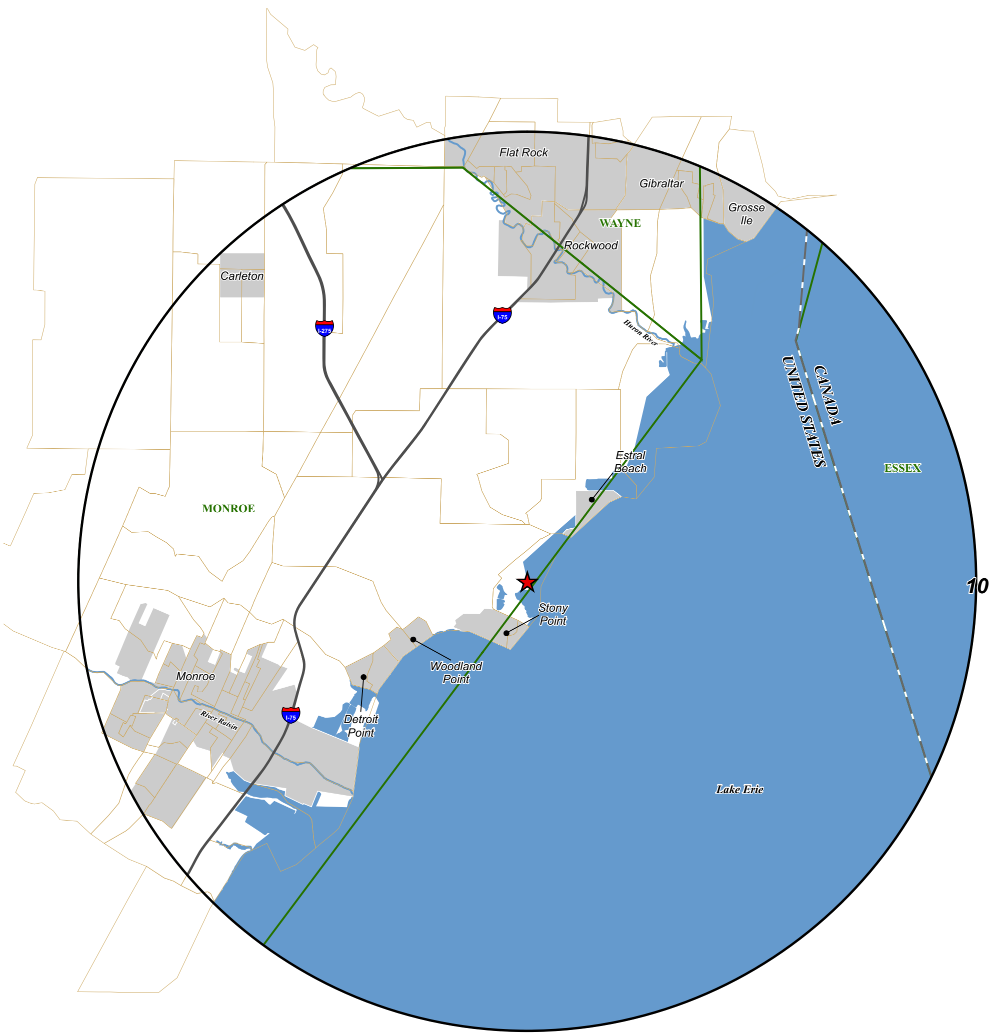


## Figure 2.5-9 Regional Census Block Groups (CGBs) within 50-Mile Radius of Fermi 3

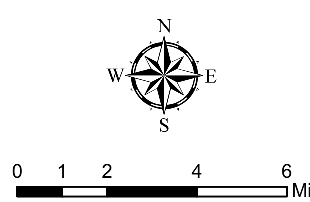



Source: Reference 2.5-3

**Figure 2.5-10 Census Block Groups (CBGs) within 10-Mile Radius of Fermi 3**

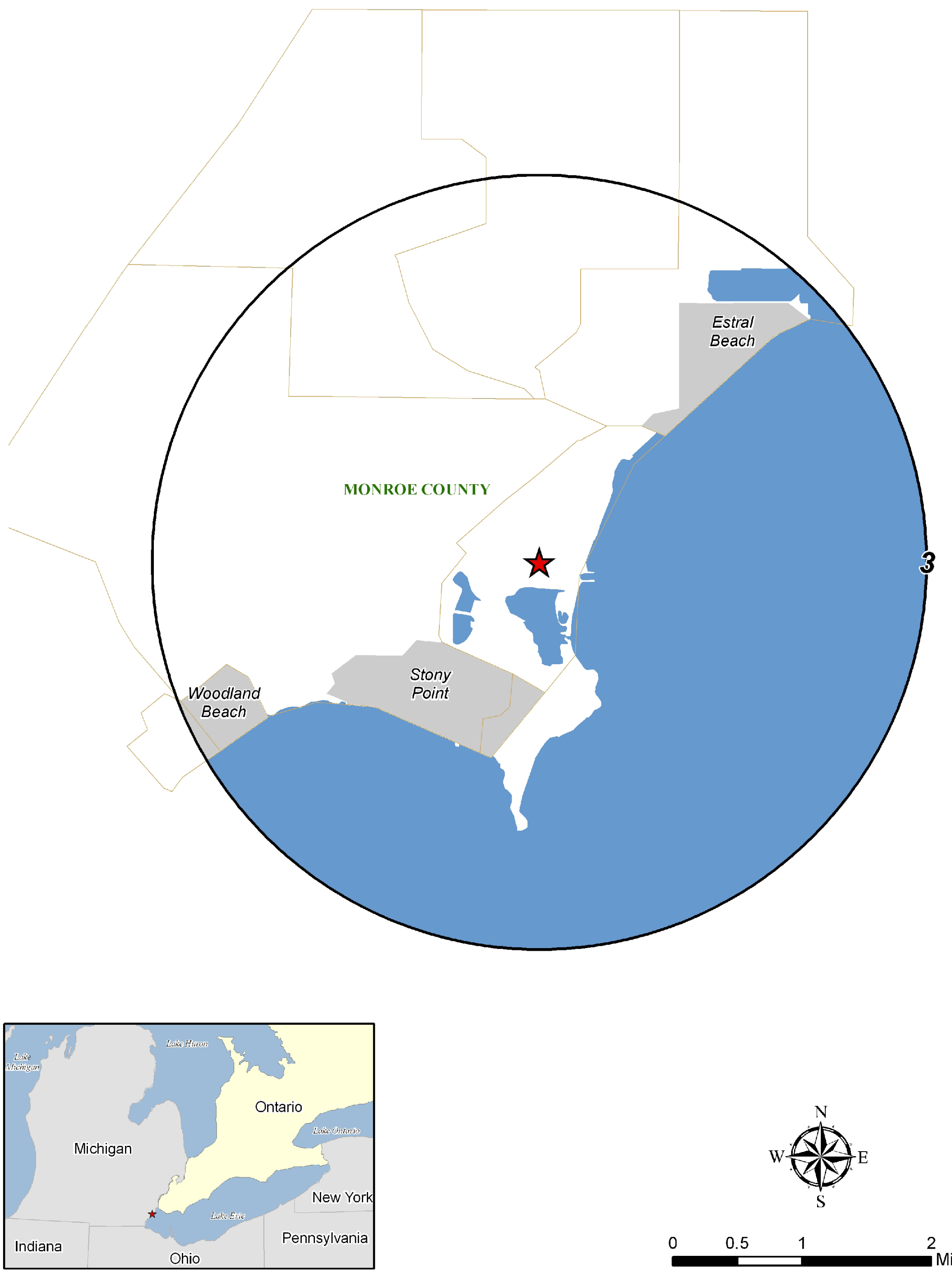







Source: Reference 2.5-3

**Figure 2.5-11 Census Block Groups (CBGs) within 3-Mile Radius of Fermi 3 (the LPZ area)**




Source: Reference 2.5-3

## Figure 2.5-12 Detroit CSA

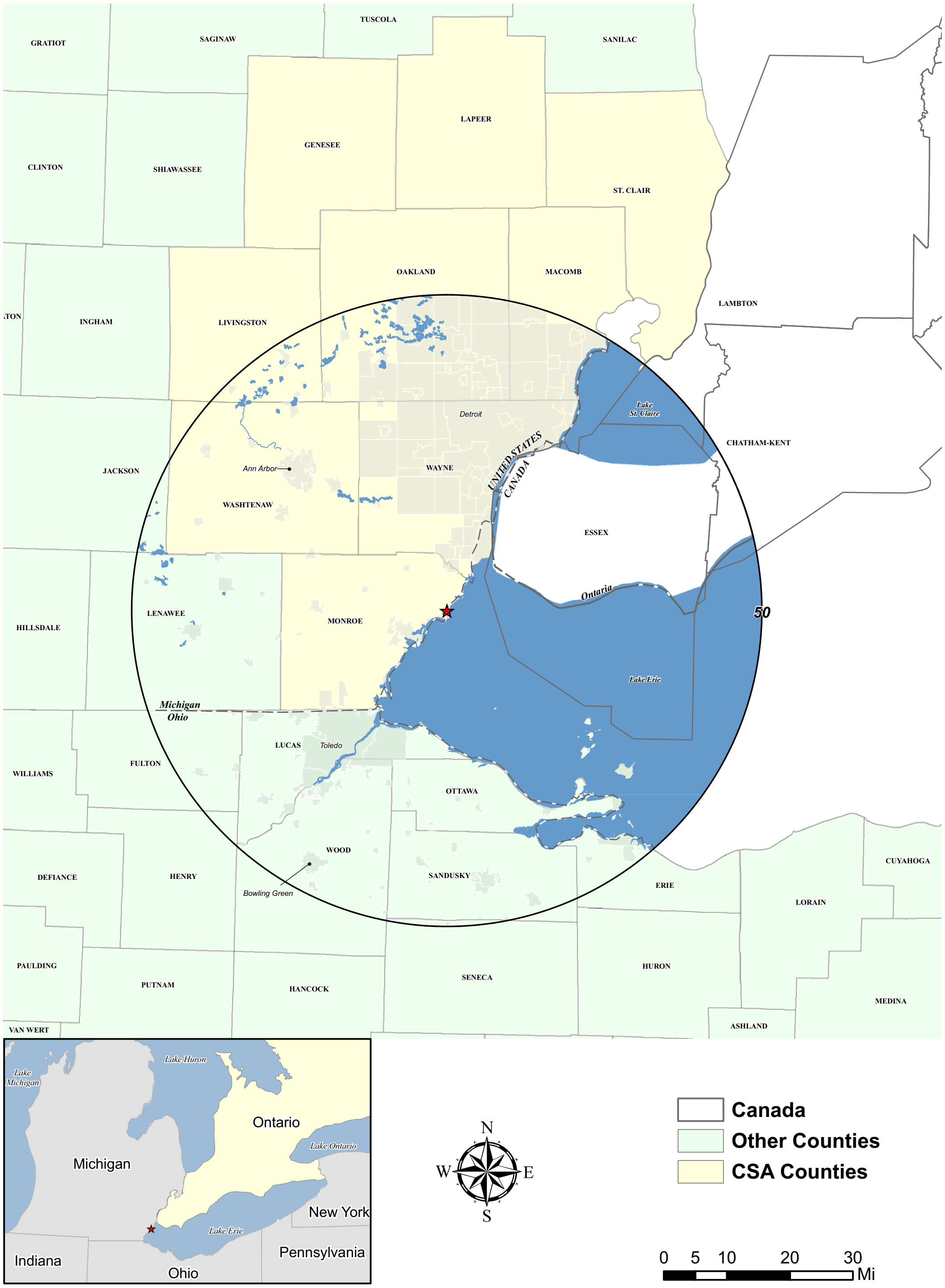
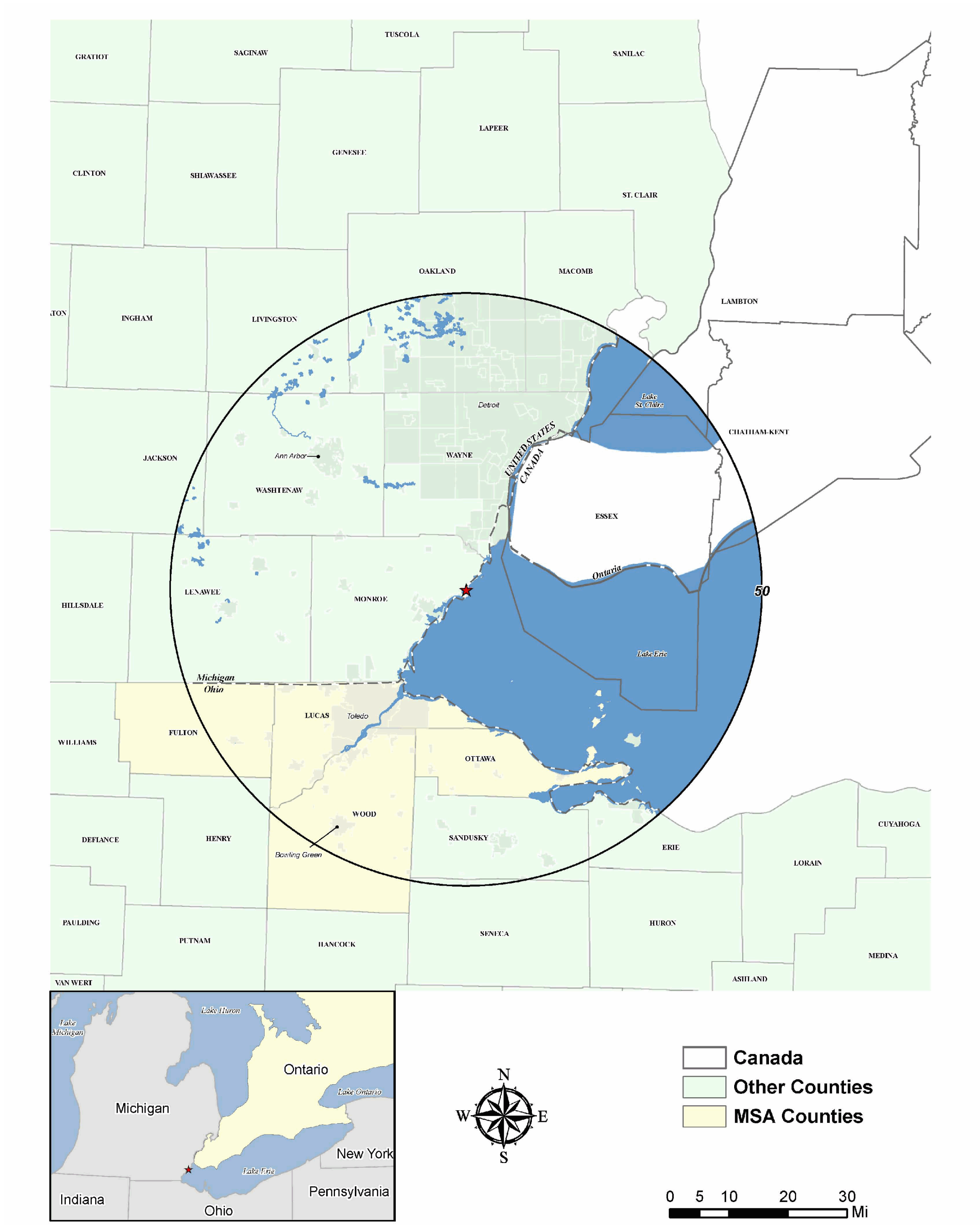
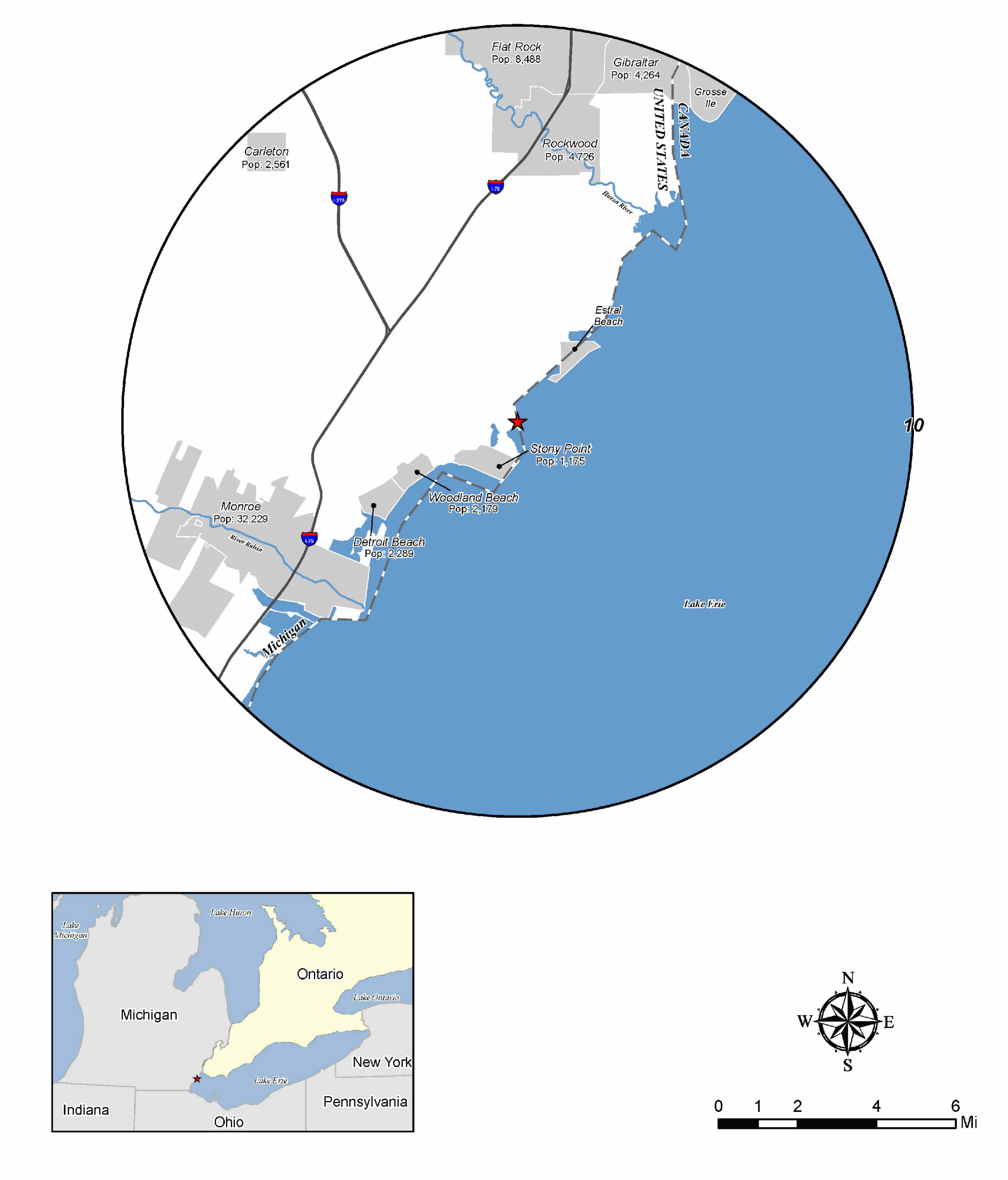


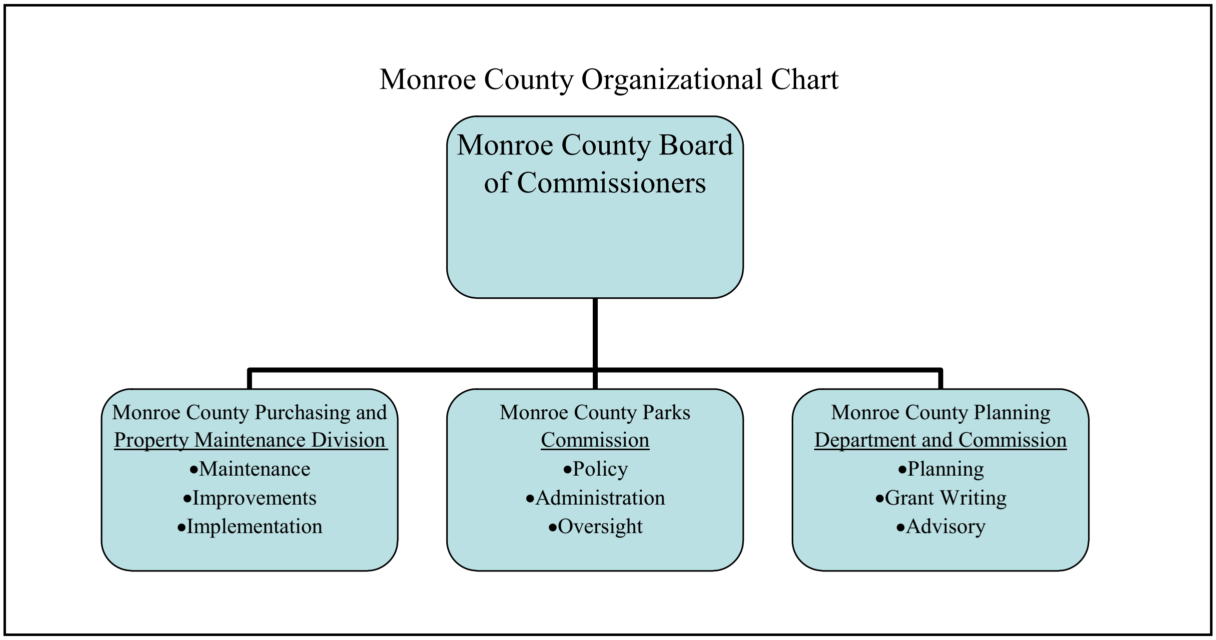
**Figure 2.5-13 Toledo MSA**



## Figure 2.5-14 Small Population Centers

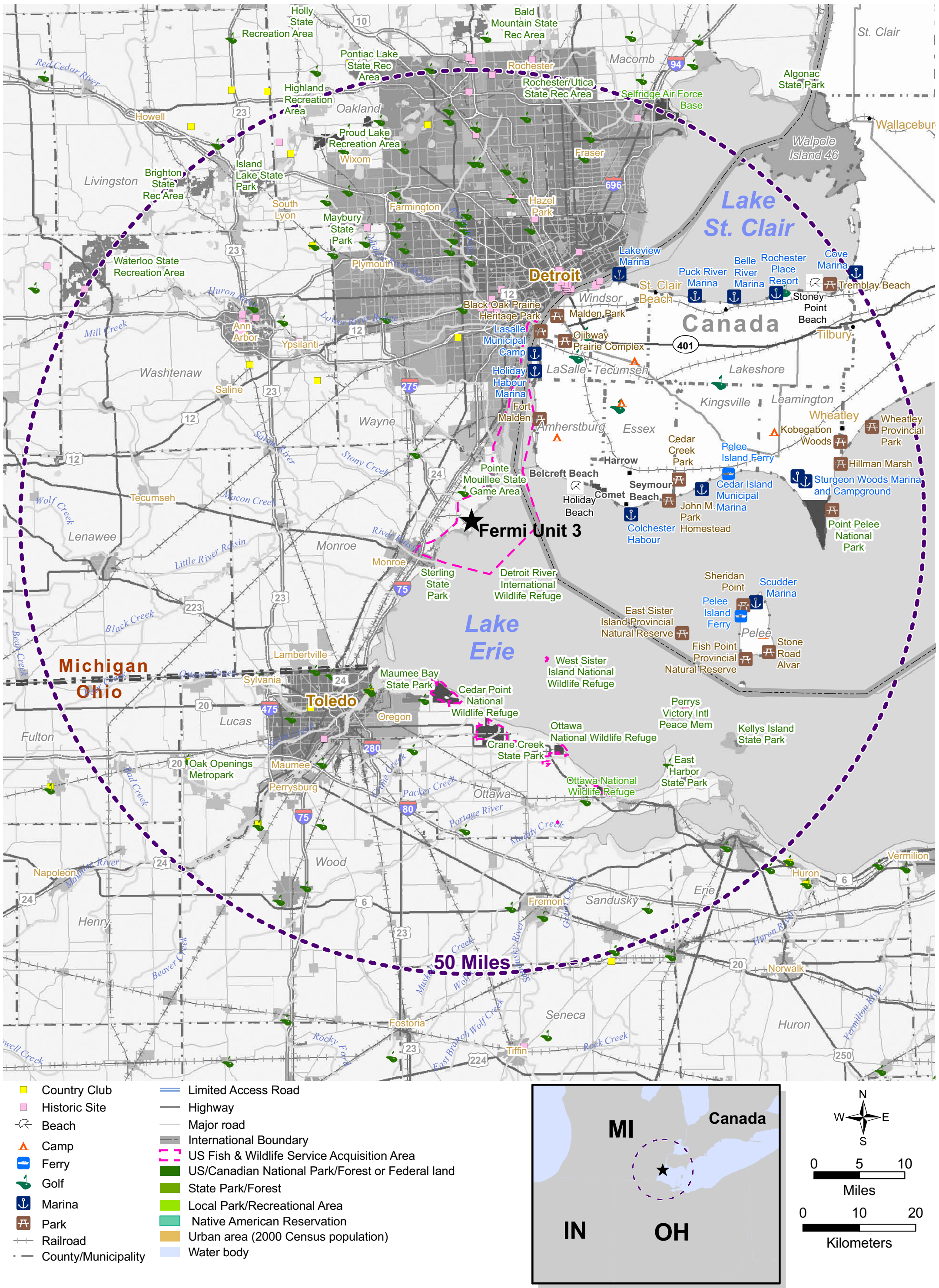


## Figure 2.5-15 Monroe County Organization Chart




Source: Reference 2.5-12

## Figure 2.5-16 Natural, Public, and Recreation Areas within the 50-mi Region



## Figure 2.5-17 Frenchtown Existing Land Use

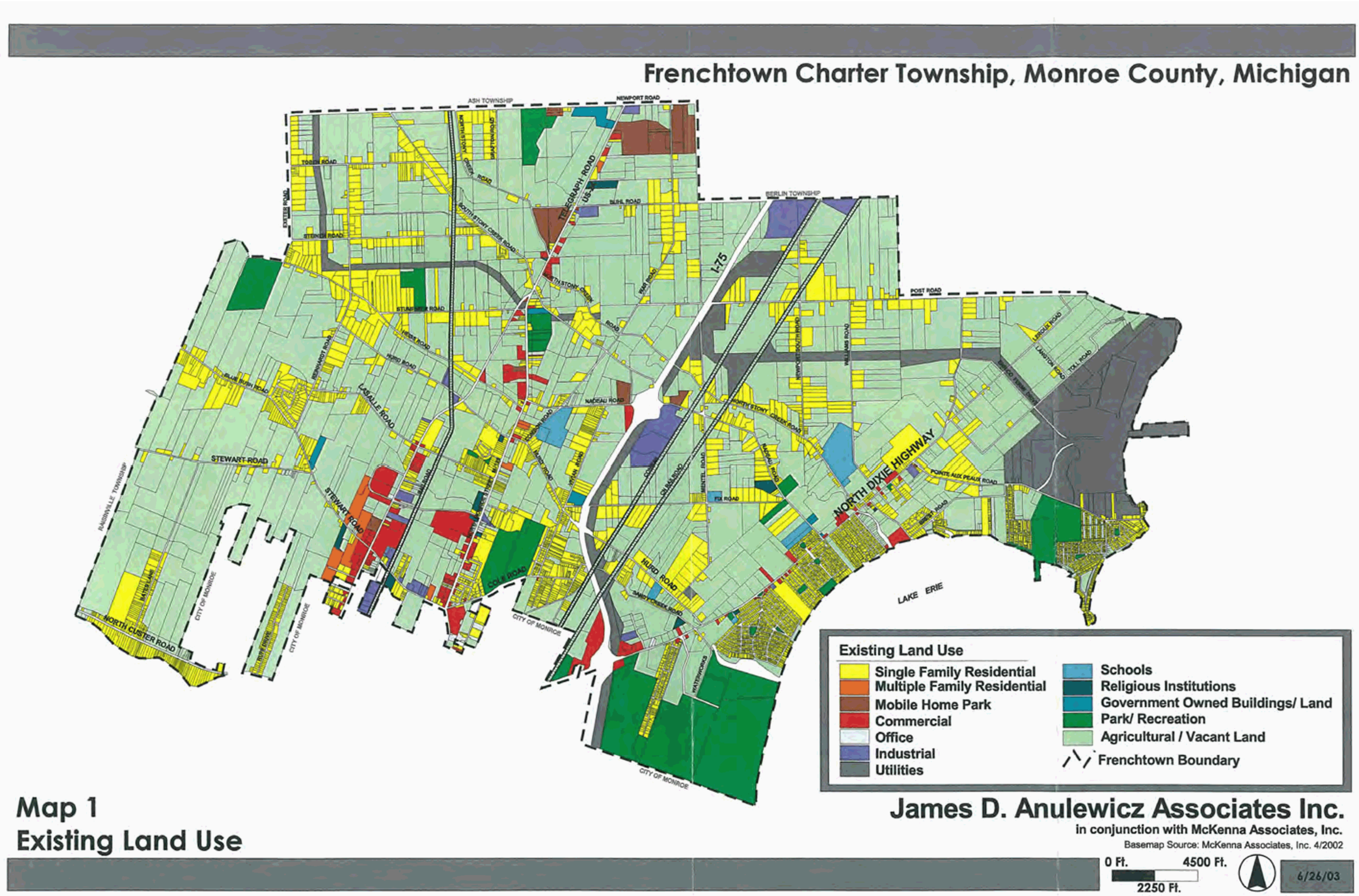
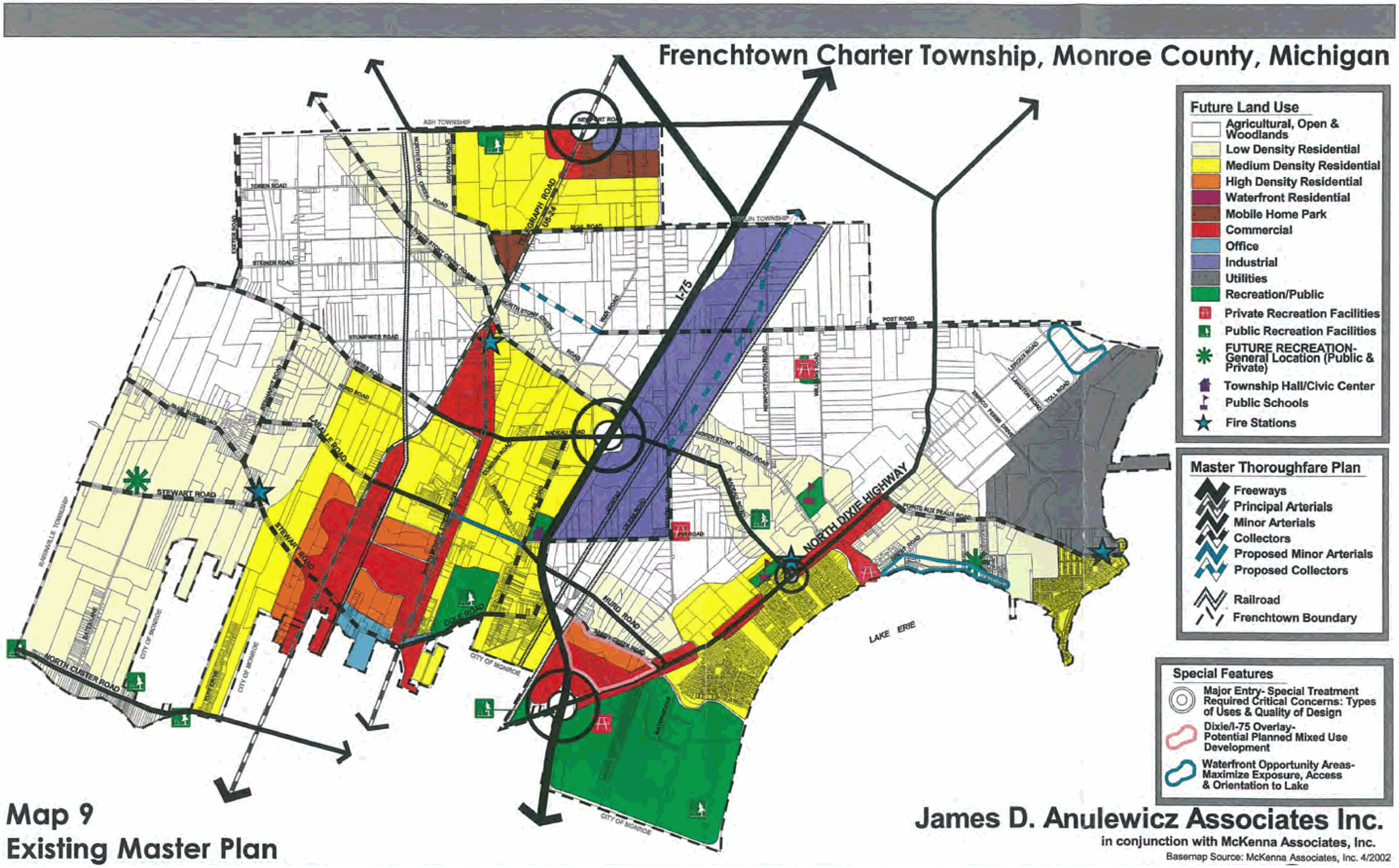


**Figure 2.5-18 Frenchtown Future Land Use**



## Figure 2.5-19 Frenchtown Water Service Areas

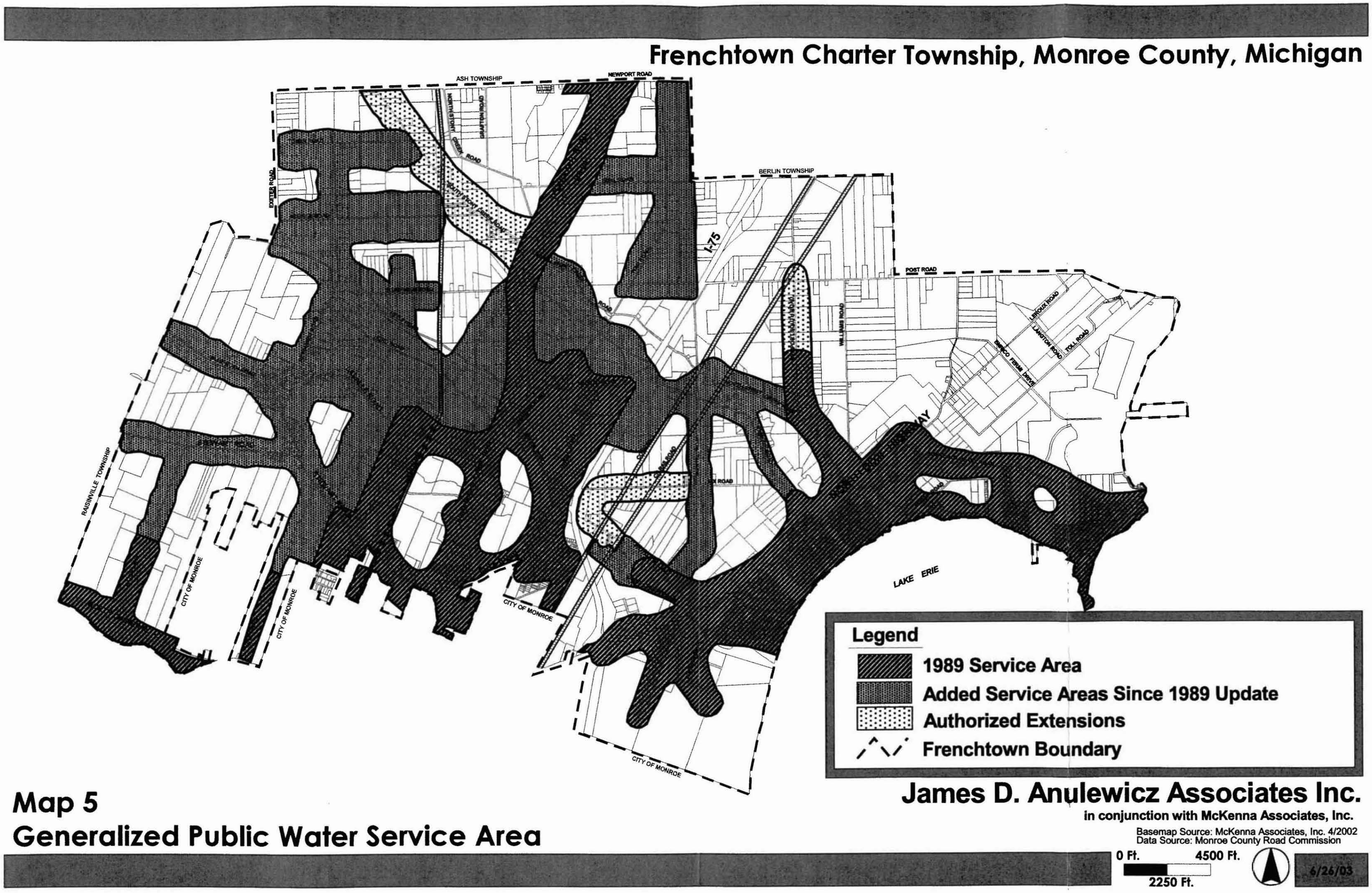
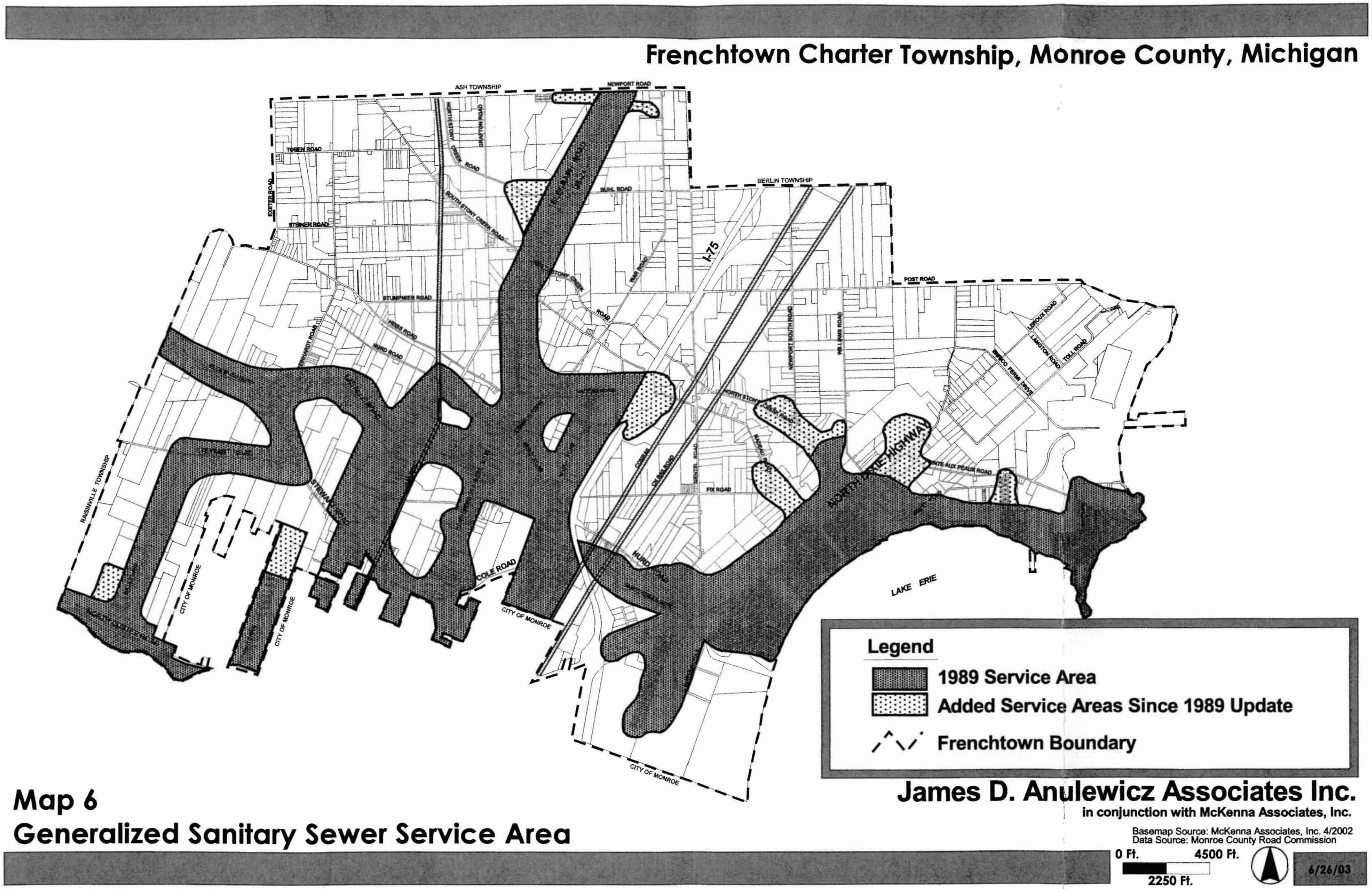
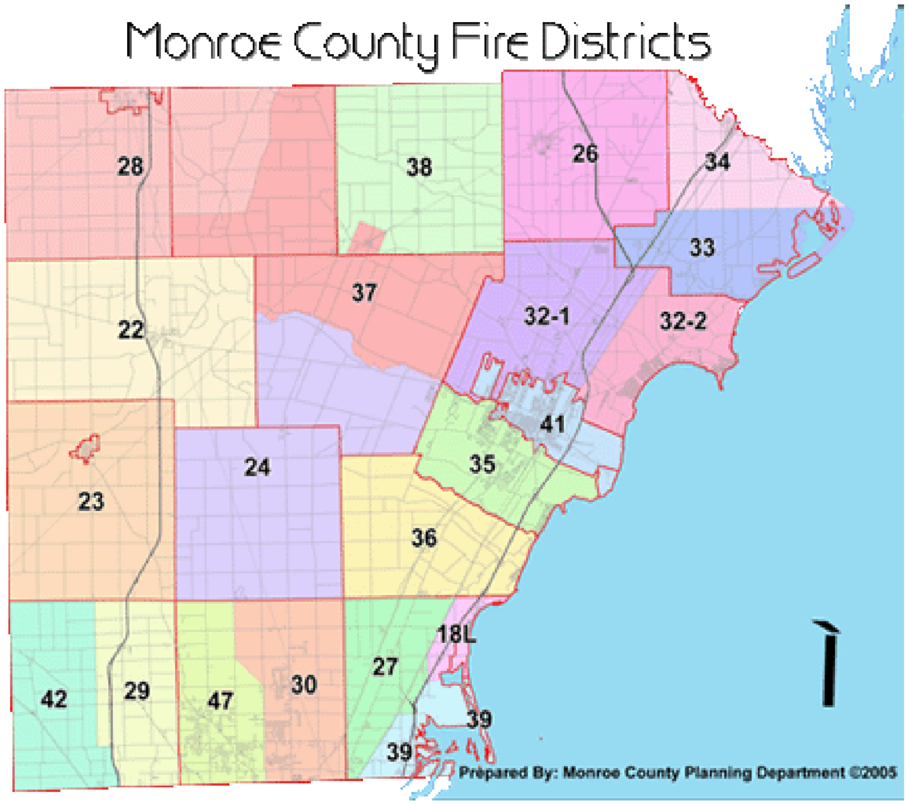


Figure 2.5-20 Frenchtown Sewer Service Areas



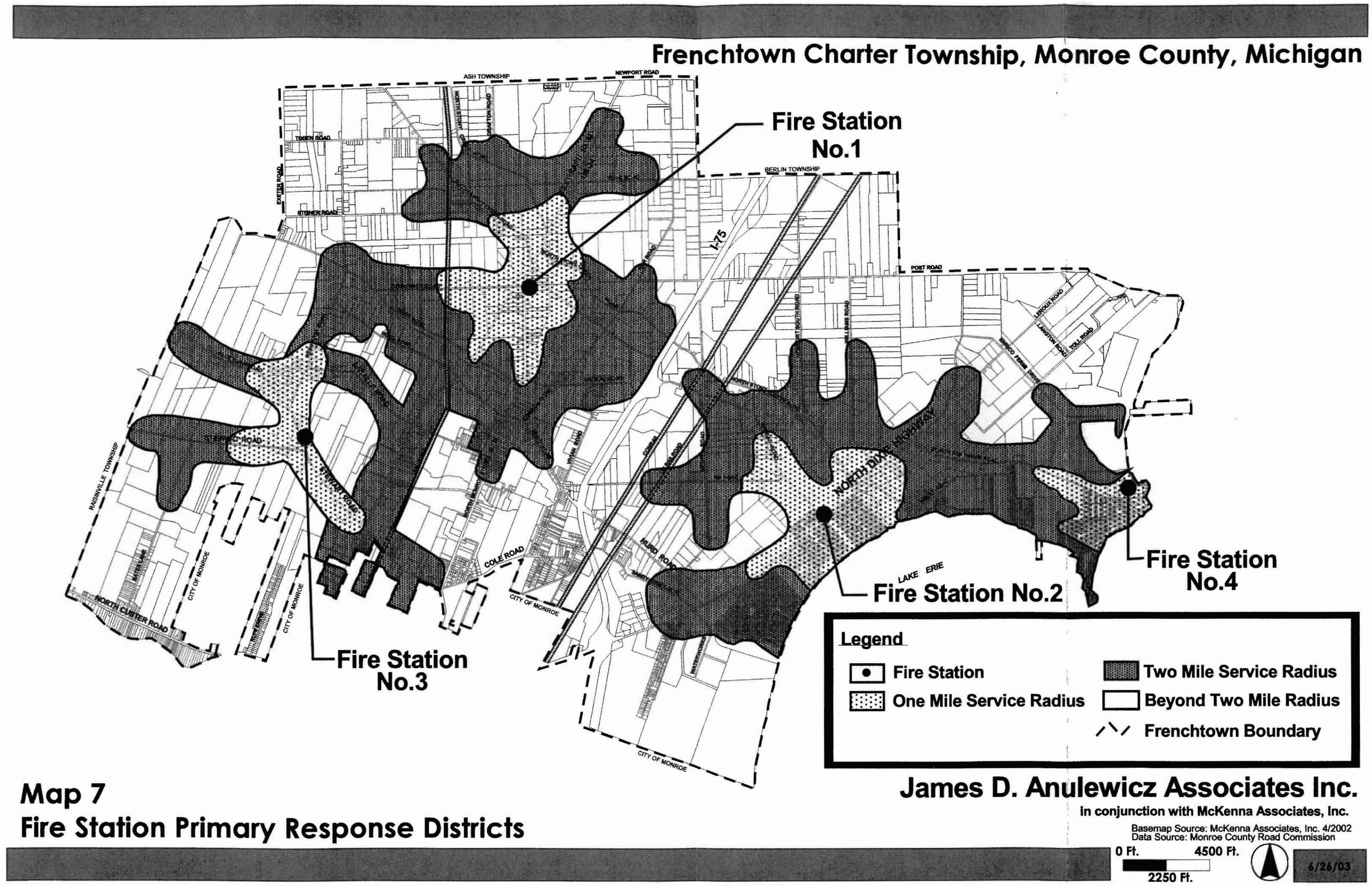
## Figure 2.5-21 Monroe County Fire Districts




| Fire Department | Twp/City/Village |
|---|---|
| 18L - Luna Pier | City of Luna Pier |
| 22 - Dundee | Dundee Twp |
| 23 - Summerfield | Summerfield Twp |
| 24 - Ida | Ida (Village) |
| 24 - Ida | Raisinville Twp |
| 24 - Ida | Ida Twp |
| 26 - Ash | Carleton Village |
| 26 - Ash | Ash Twp |
| 27 - Erie | Erie Twp |
| 28 - Milan | Milan Twp |
| 28 - Milan | London Twp |
| 29 - Whiteford | Whiteford Twp |
| 30 - Bedford (Temperance) | Bedford Twp |
| 32-1 Frenchtown | Frenchtown Twp |
| 32-2 Frenchtown | Frenchtown Twp |
| 33 - Newport | Berlin Twp |
| 34 - South Rockwood | Berlin Twp |
| 35 - Monroe | Monroe Twp |
| 36 - LaSalle | LaSalle Twp |
| 37 - London-Maybee-Raisinville | London Twp |
| 37 - London-Maybee-Raisinville | Raisinville Twp |
| 37 - London-Maybee-Raisinville | Maybee Village |
| 38 - Exeter | Exeter Twp |
| 39 - Morin Point | Erie Twp |
| 41 - Monroe | Monroe City |
| 41 - Monroe | Monroe City |
| 42 - Ottawa Lake | Whiteford Twp |
| 47 - Bedford (Lambertville) | Bedford Twp |
| 58 - Estral Beach | Estral Beach Village |

Source: Reference 2.5-44

**Figure 2.5-22 Frenchtown Fire Department Locations**



## Figure 2.5-23 Frenchtown Road Network

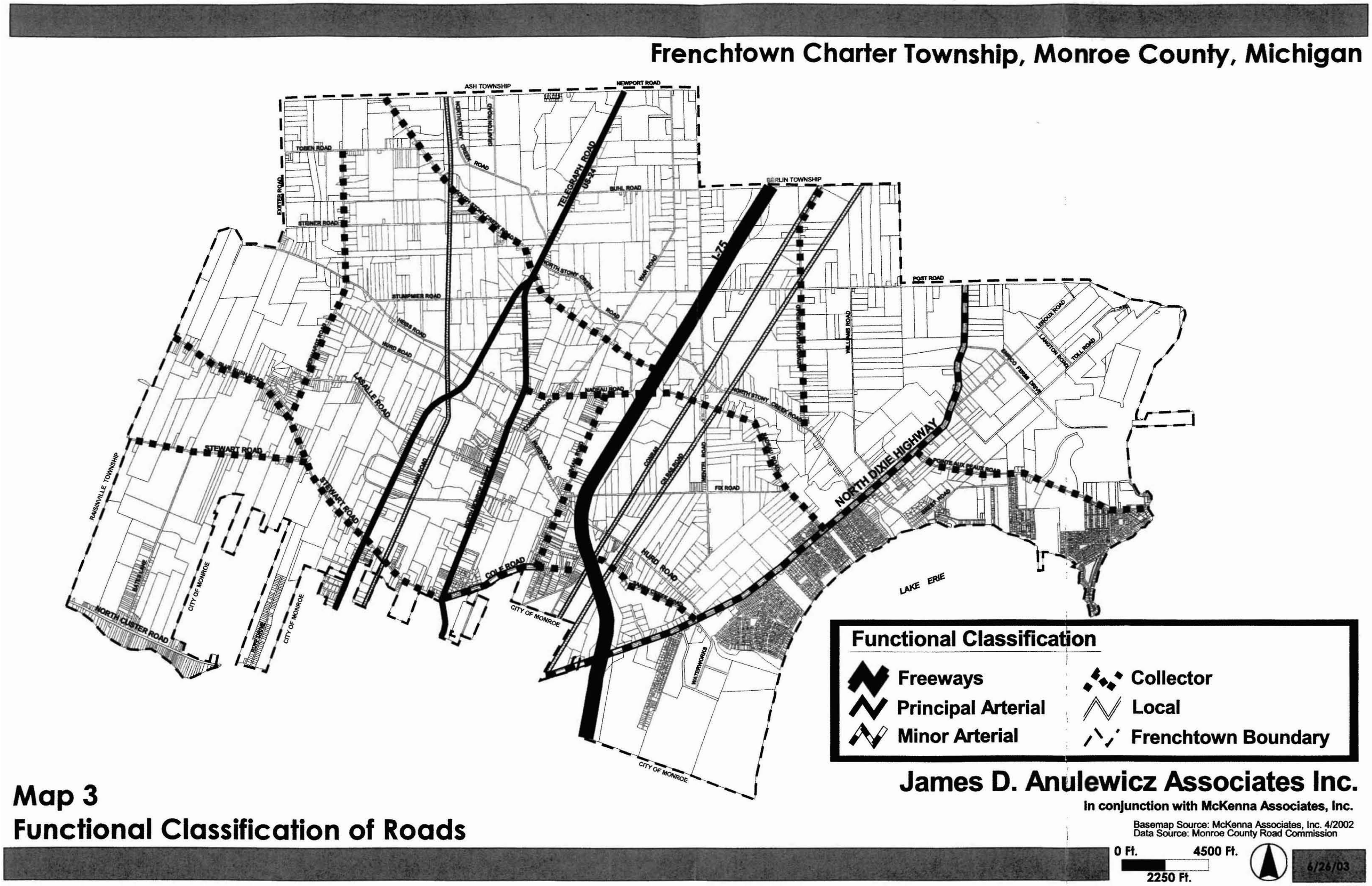


Figure 2.5-24 Traffic Volumes Frenchtown Master Township

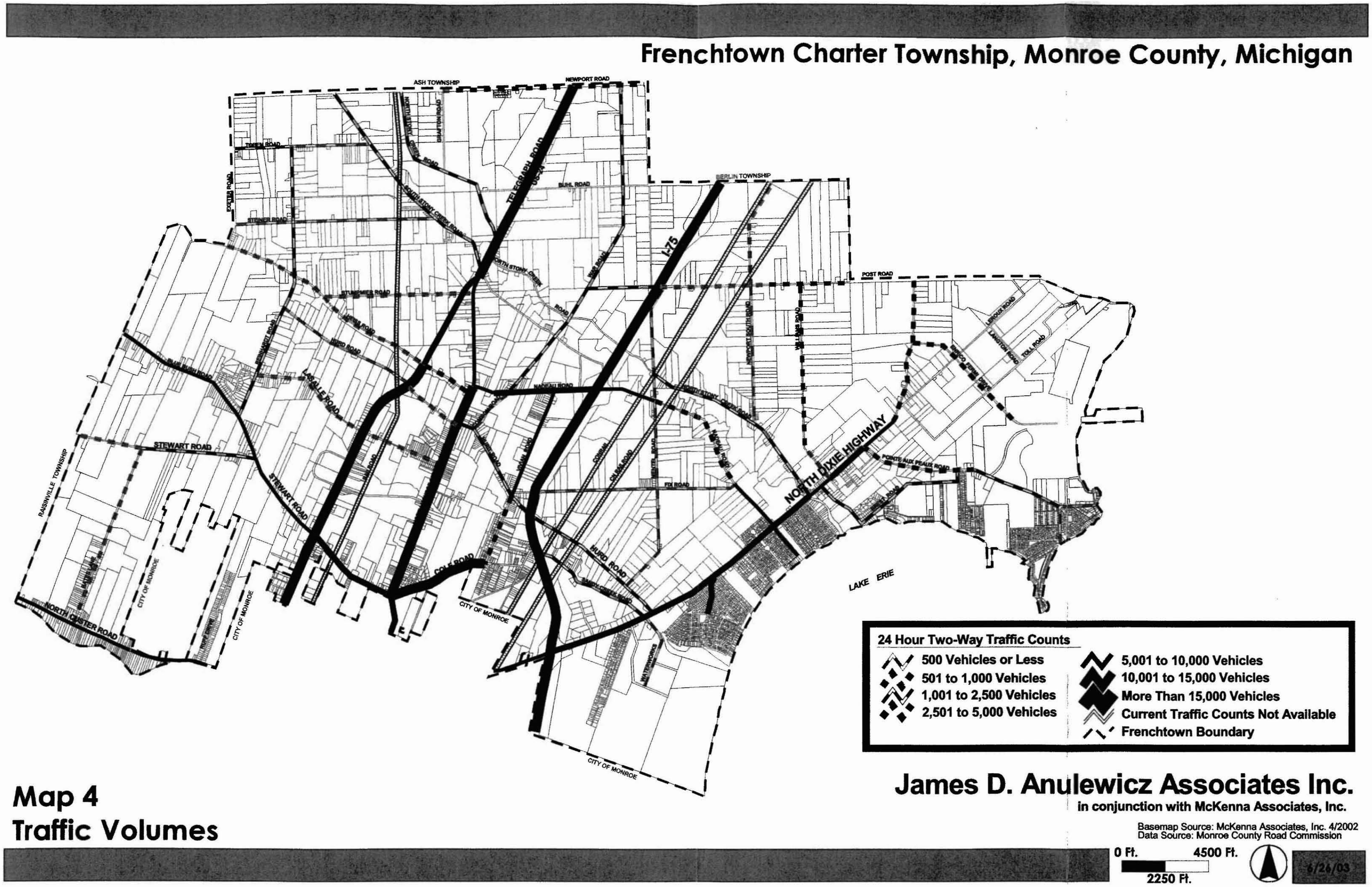
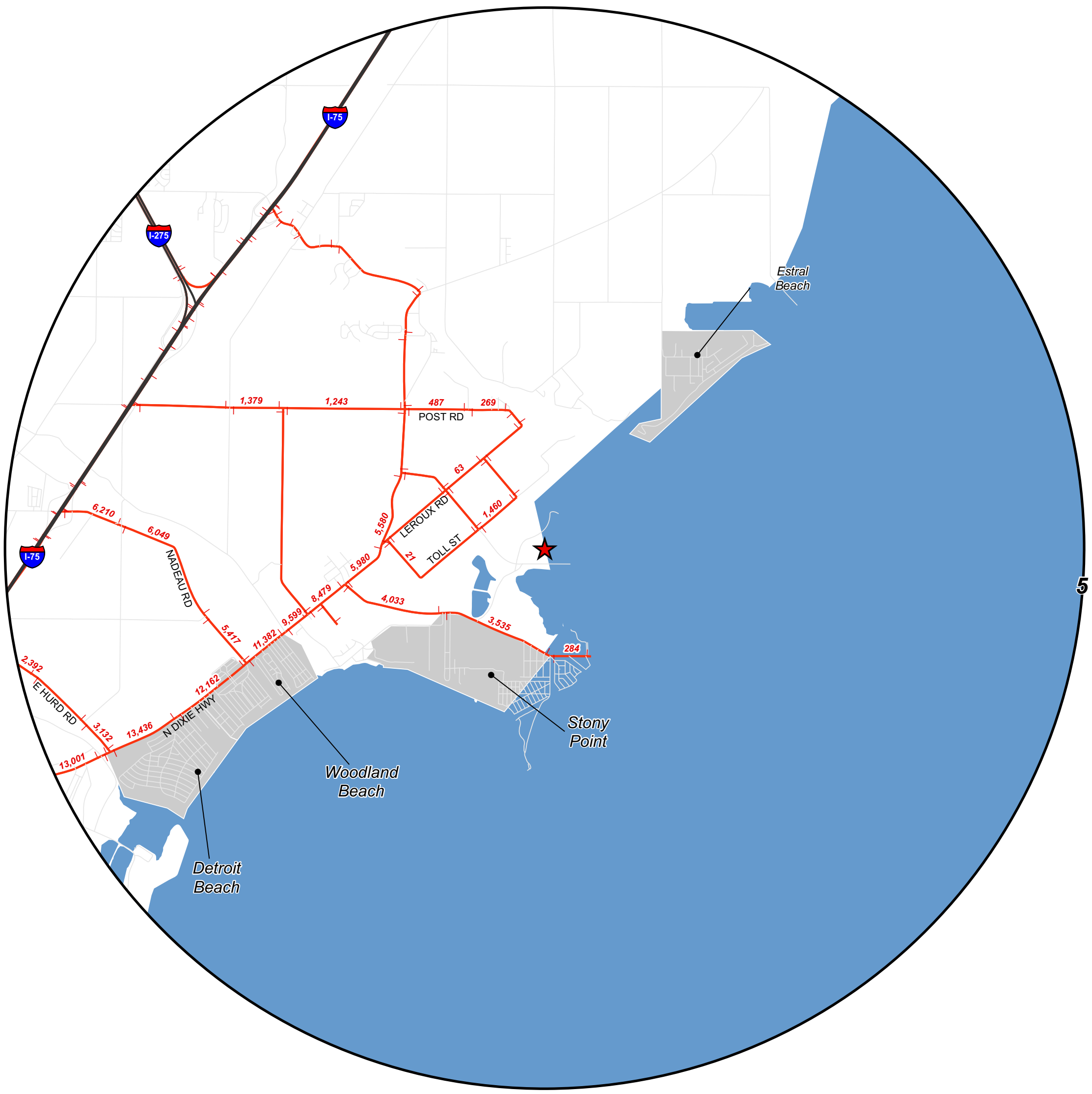


**Figure 2.5-25 Traffic Counts within a 5-Mile Radius of the Fermi Site**





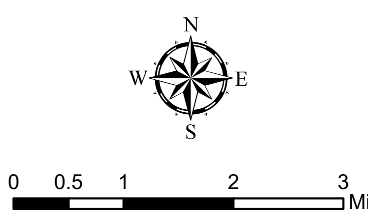
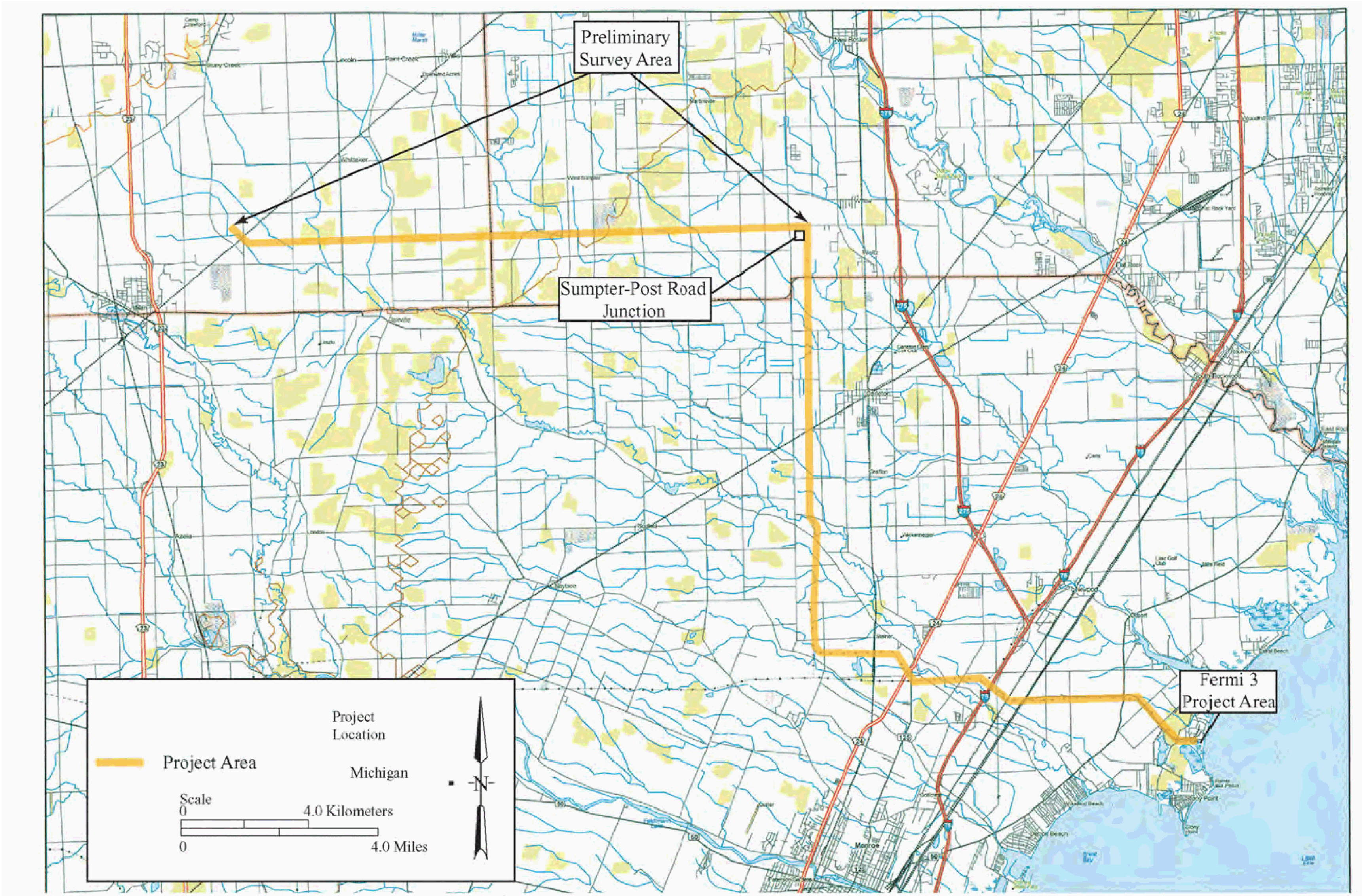
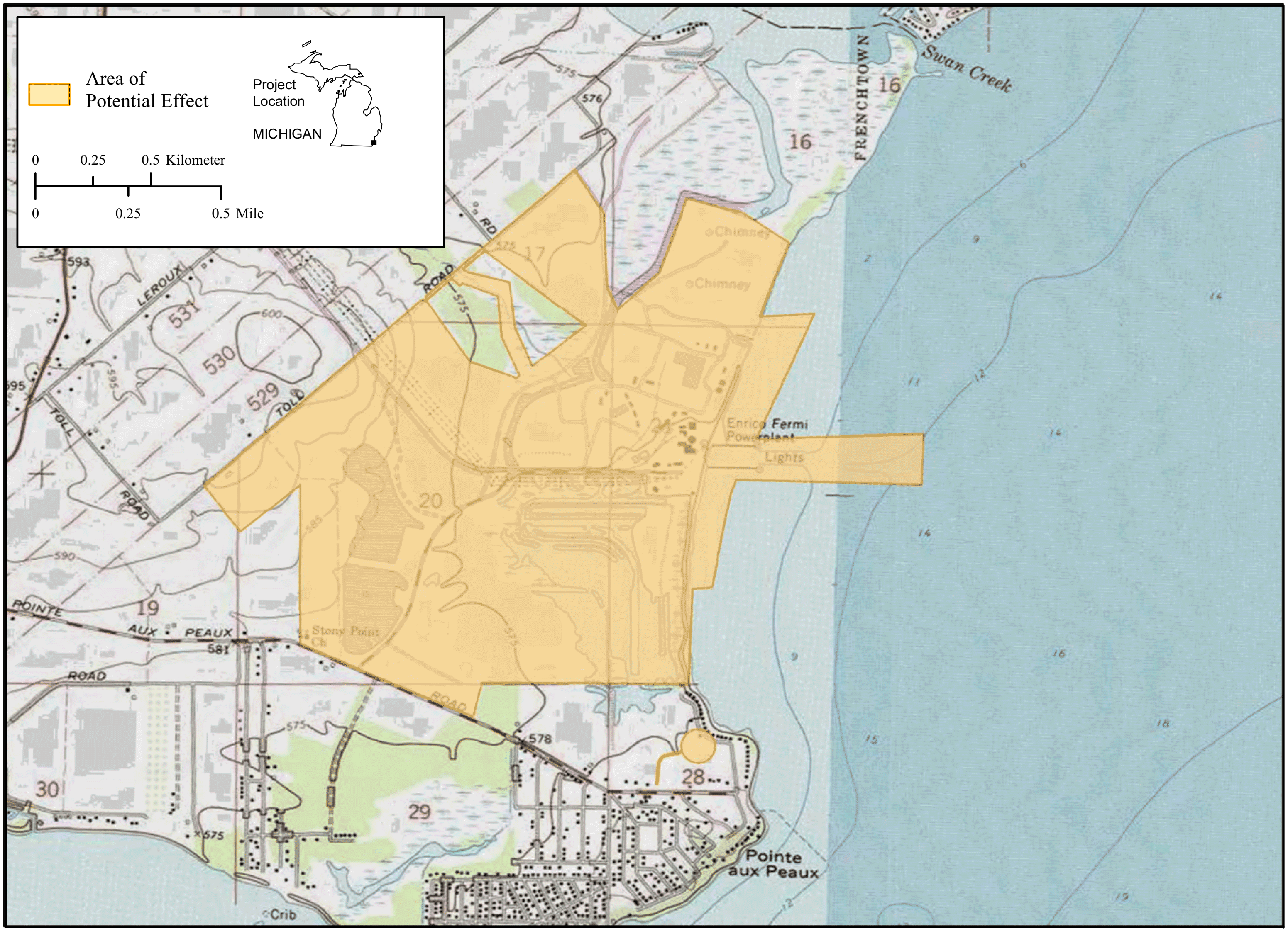


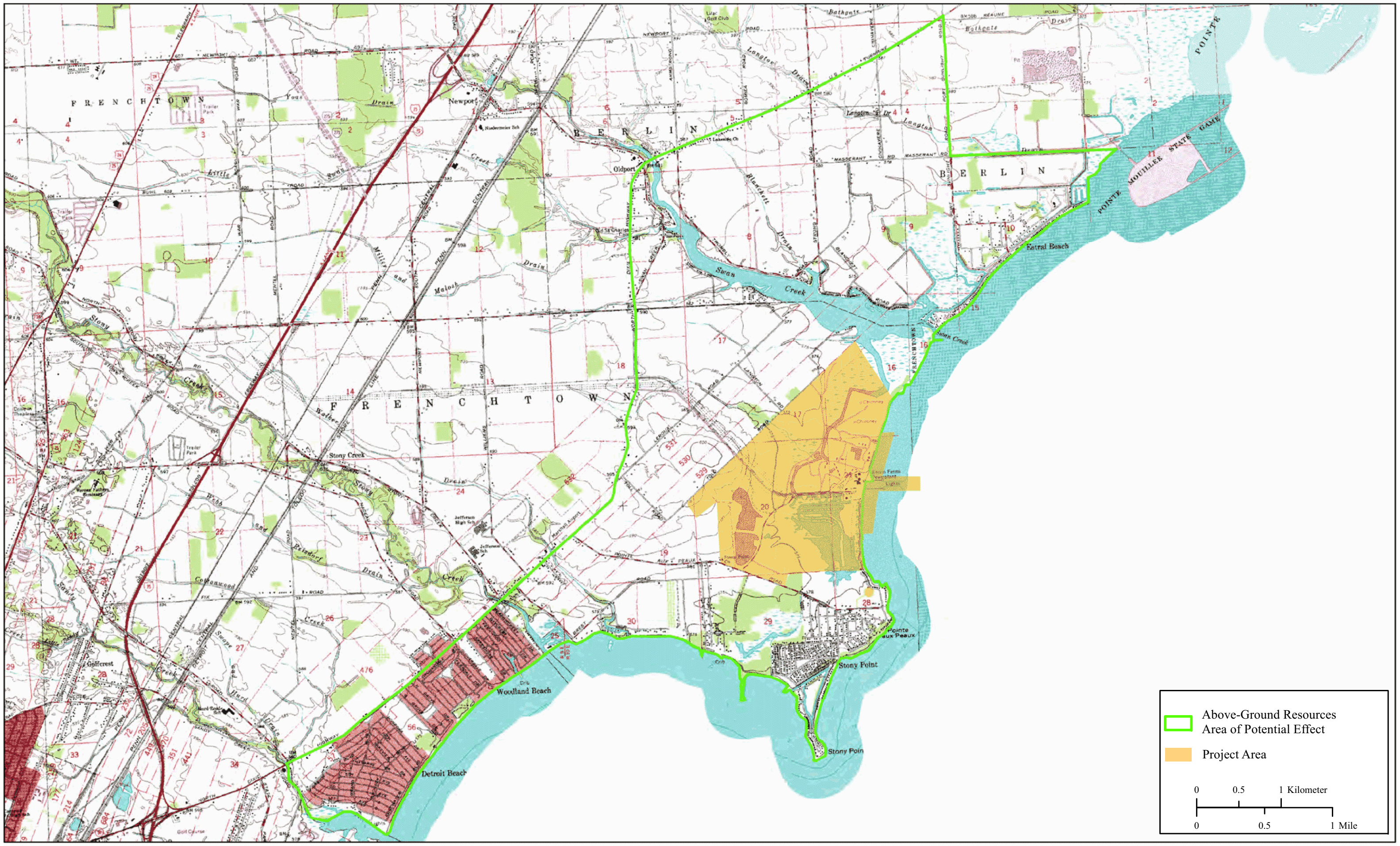
**Figure 2.5-26 Fermi to Milan Transmission Line Cultural Resources Preliminary Survey**



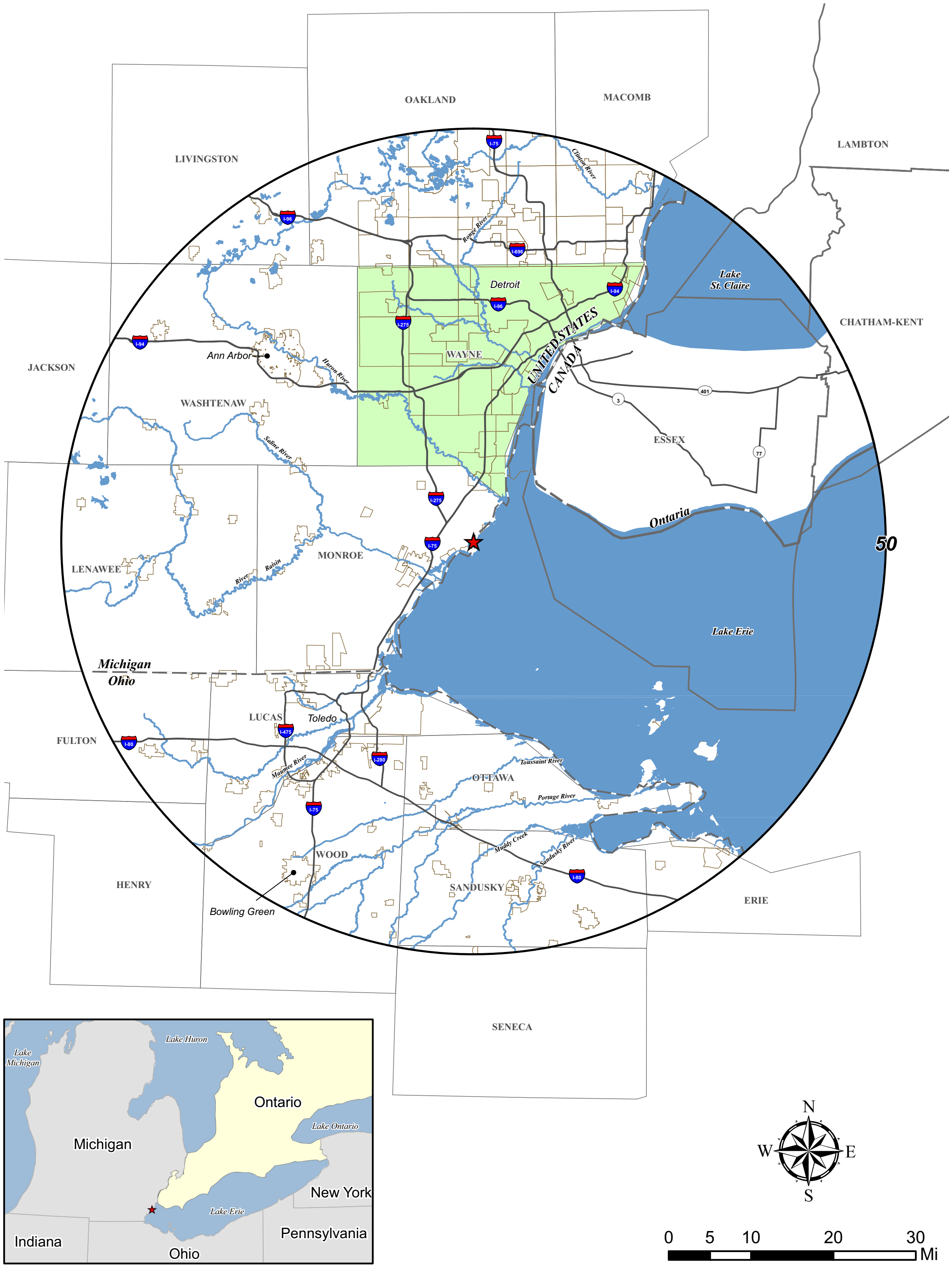
## Figure 2.5-27 Fermi 3 Project Archaeological Area of Potential Effect



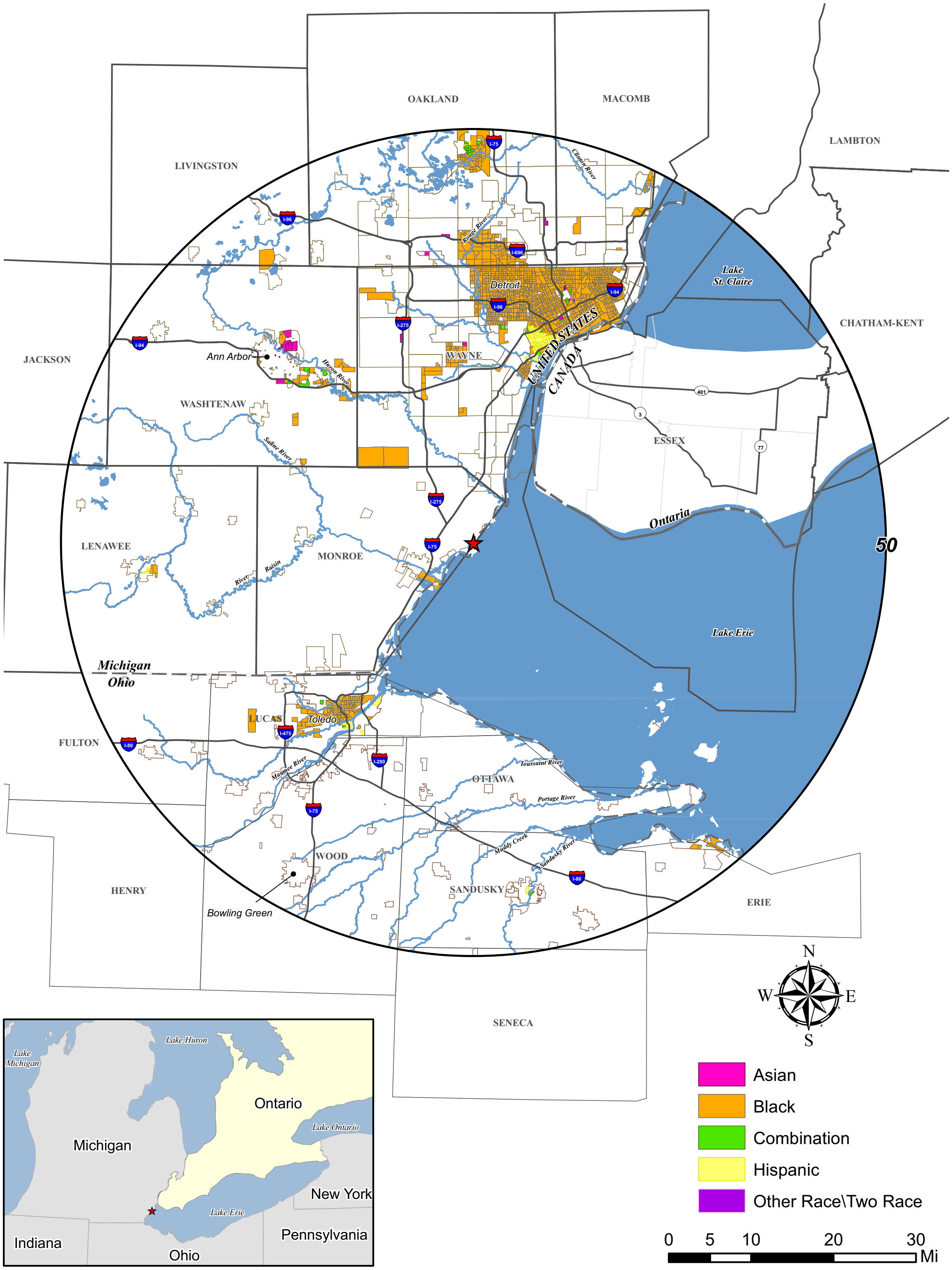
## Figure 2.5-28 Fermi 3 Project Above-Ground Cultural Resources Area of Potential Effect



## Figure 2.5-29 Minority Counties in the Fermi 3 Region



## Figure 2.5-30 Minority Census Block Groups (CBGs) in the Fermi Region



## Figure 2.5-31 Low Income Census Block Groups (CBGs) in the Fermi Region

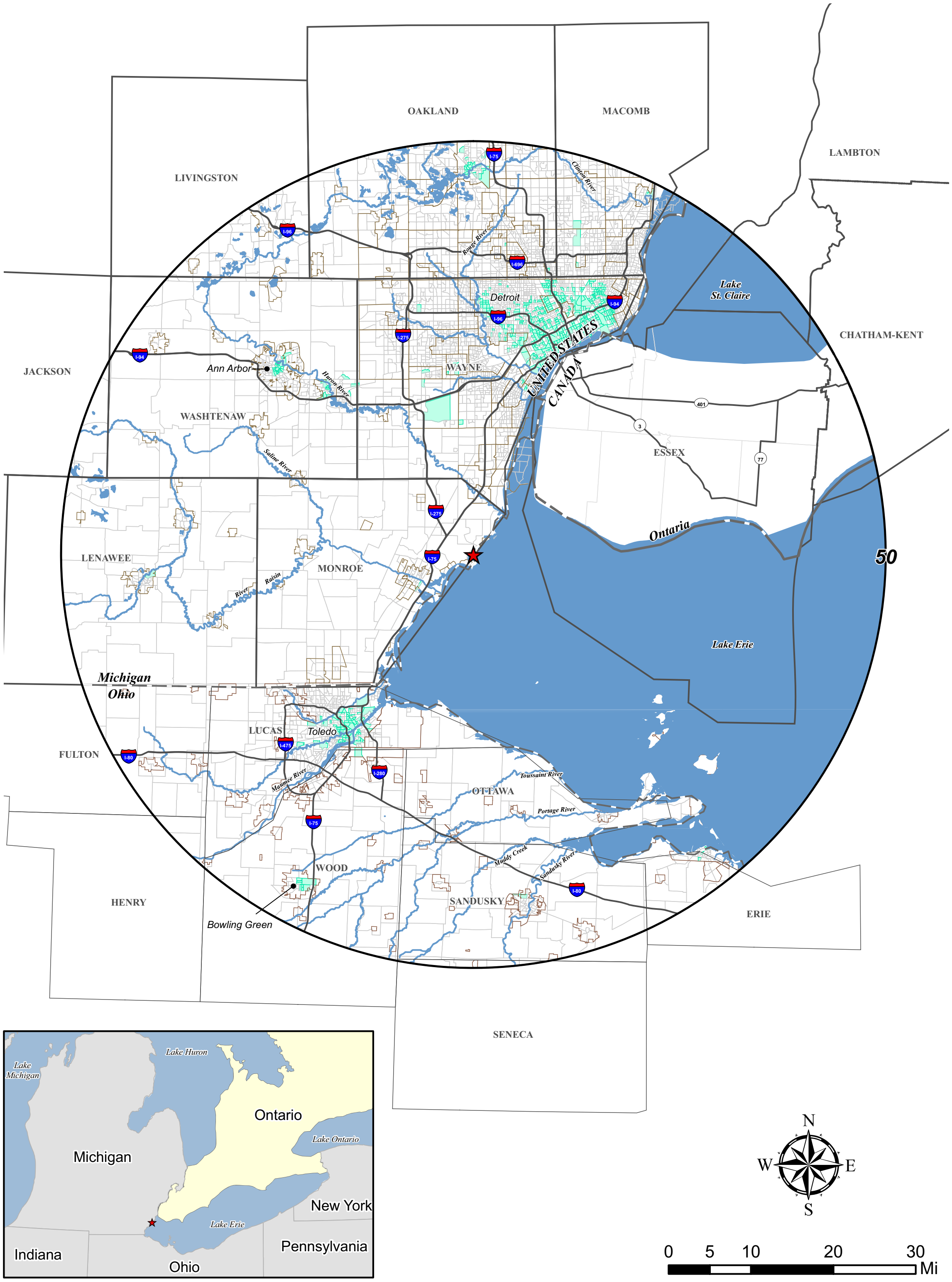


**Figure 2.5-32 Fermi Noise Monitoring Locations (NMLs)**

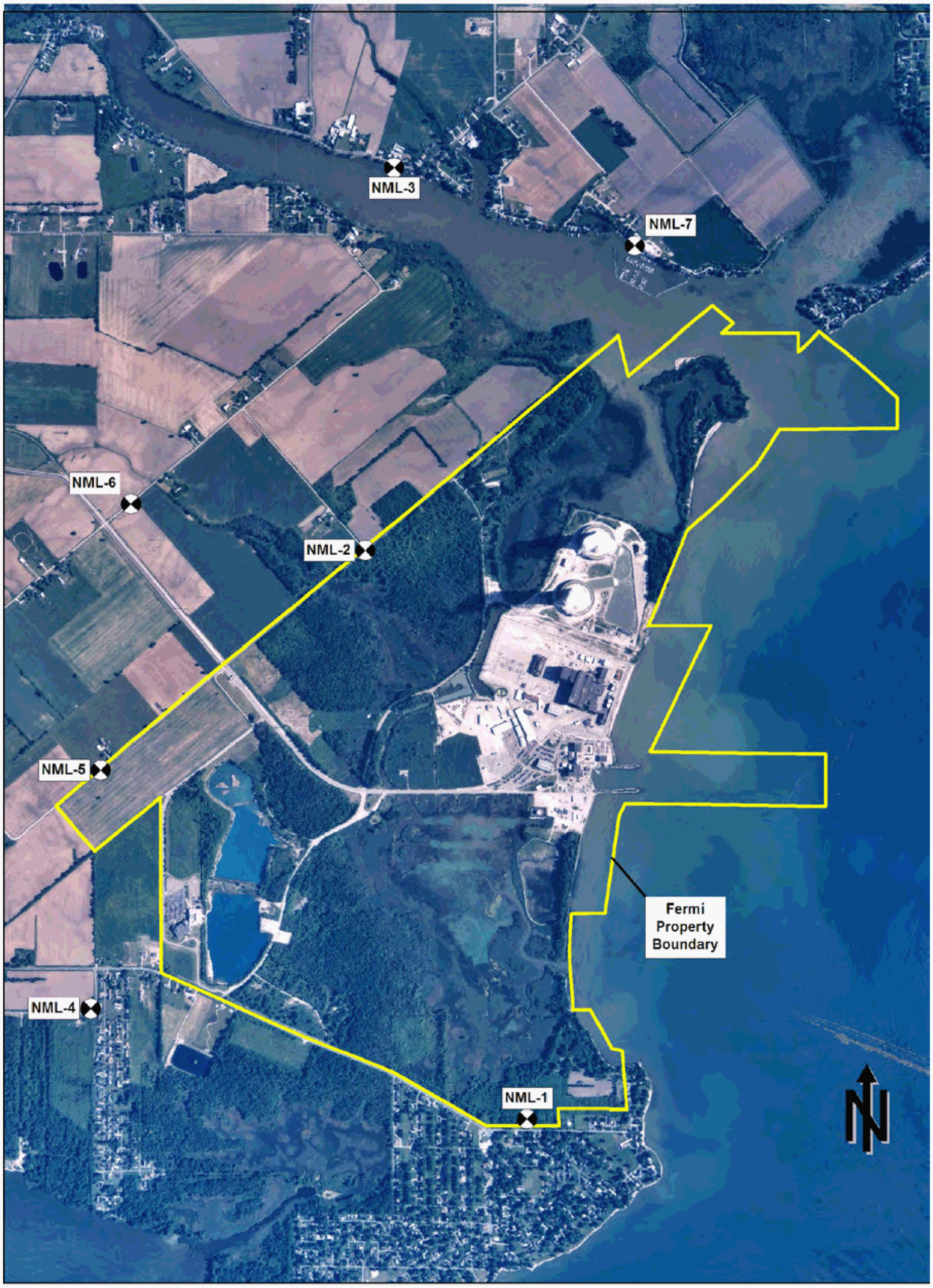


**Figure 2.5-33 Hourly Equivalent Continuous Sound Levels ($L_{eq}$) for NMLs 1-3, November 27-28, 2007**

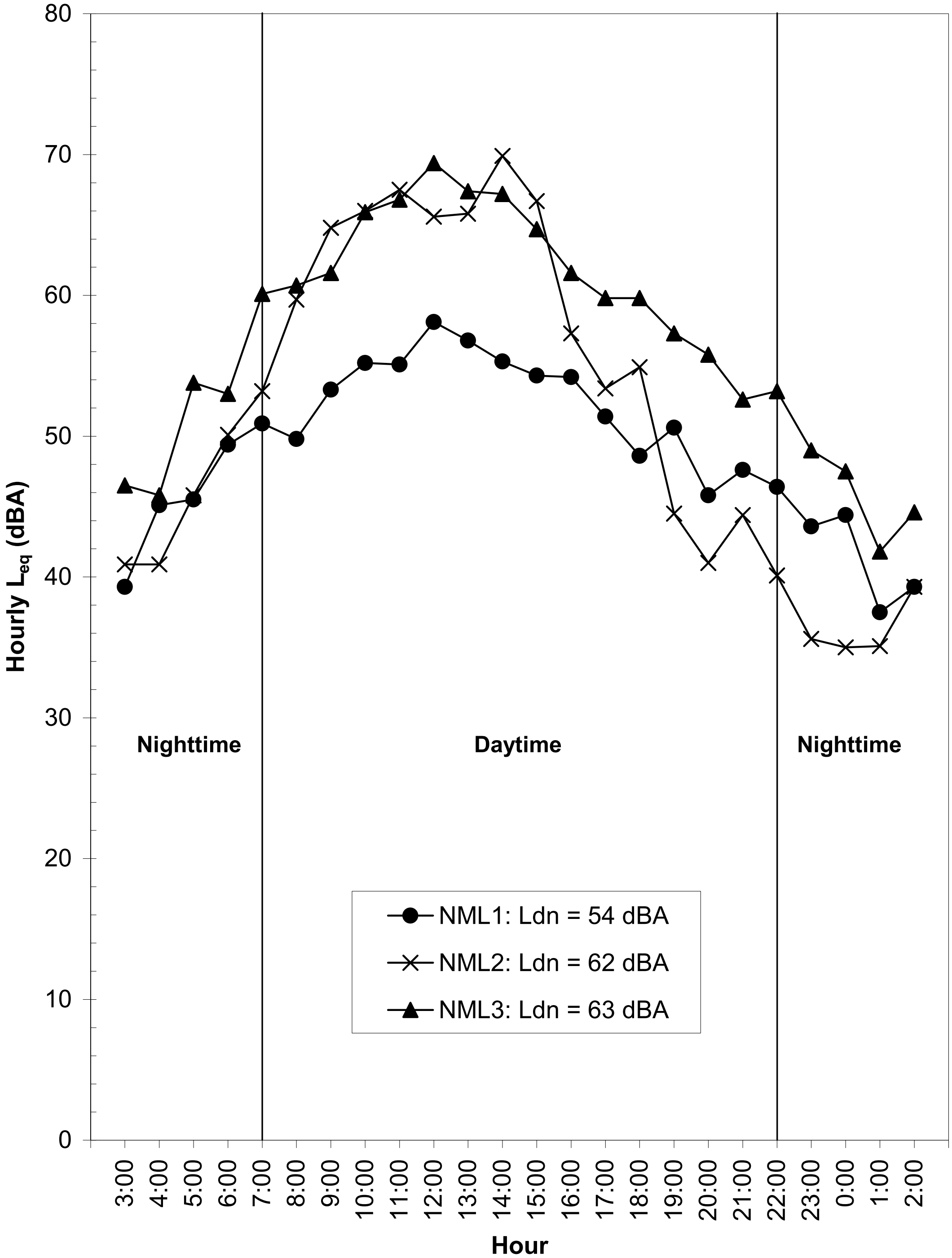
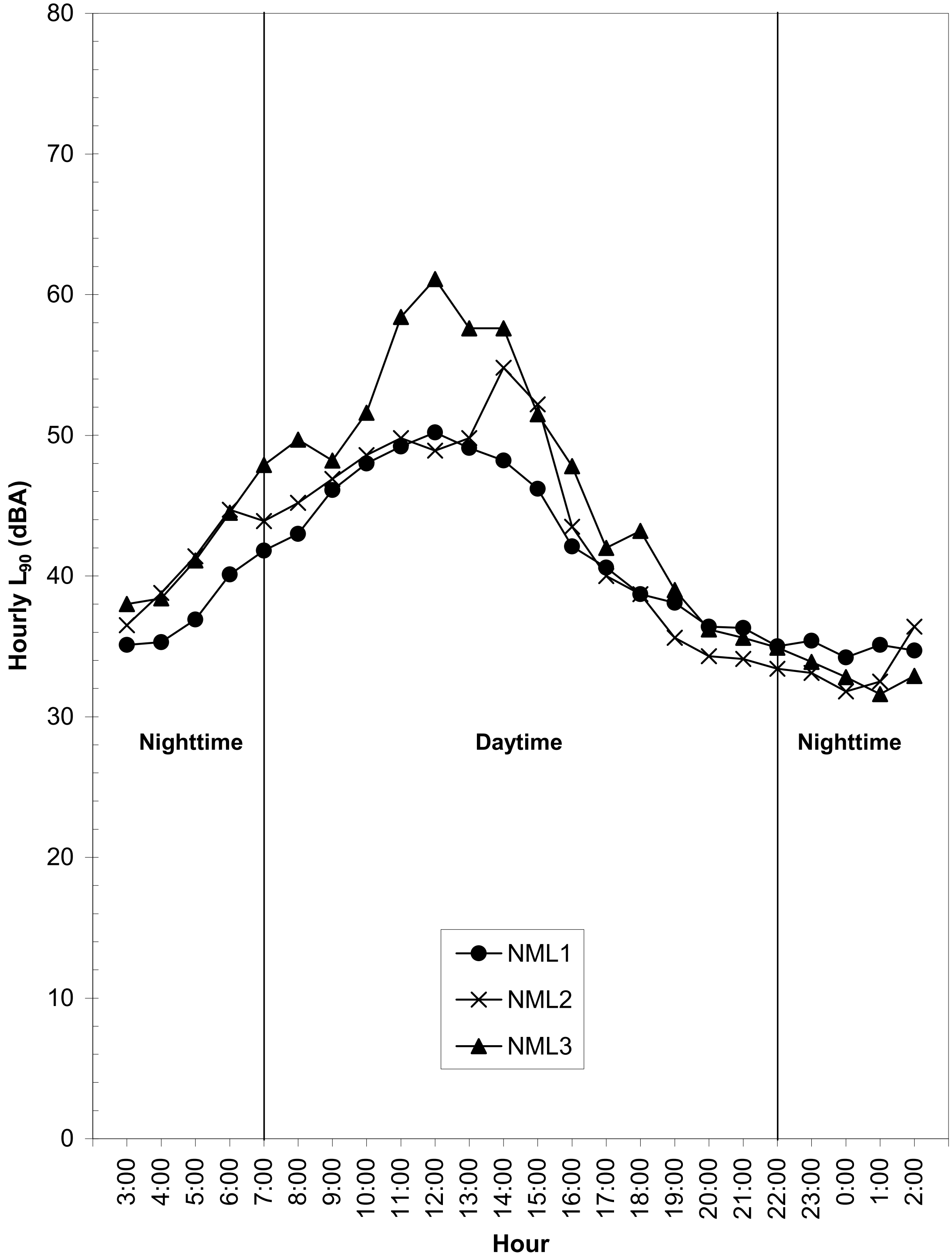


**Figure 2.5-34 Hourly $L_{90}$ Sound Levels for NMLs 1-3, November 27-28, 2007**



## 2.6 Geology

This section presents the geology and geologic environmental impacts for Fermi 3. A description of the physiography, geology, seismology, and tectonics for Fermi 3 is presented in FSAR Section 2.5. FSAR Section 2.5 provides a level of detail appropriate for the proposed ESBWR design.

The impacts of the site geology on the plant are covered in FSAR Section 2.5. Descriptions of the geologic structures, tectonics, and seismic hazards are in FSAR Subsection 2.5.1.1.4, FSAR Subsection 2.5.1.2.4, FSAR Subsection 2.5.2, and FSAR Subsection 2.5.3. Descriptions of the non-seismic geologic hazards are in FSAR Subsection 2.5.1.1.5 and FSAR Subsection 2.5.1.2.5. A description of the engineering geology is in FSAR Subsection 2.5.1.2.6, and the potential effects of human activity are in FSAR Subsection 2.5.1.2.6.7. Identification of the sampling pattern and the justification for its selection, the sampling method, pre-analysis treatment, and analytic techniques are presented in FSAR Subsection 2.5.4.2.2.2. The geologic environmental impact, which is defined as the impact of the construction and operation of the plant on the geology, is summarized in Subsection 2.6.5.

### 2.6.1 Topography

Fermi 3 is located in the Eastern Lake section of the Central Lowlands physiographic province. A description of the physiography, geomorphology, and topography of the Fermi 3 200-mi radius site region is in FSAR Subsection 2.5.1.1.1. The 25-mi radius site vicinity, 5-mi radius site area, and 0.6 mi radius site location is described in FSAR Subsection 2.5.1.2.1.

### 2.6.2 Stratigraphy

The stratigraphy below Fermi 3 includes Precambrian igneous and metamorphic rocks, Cambrian through Silurian sedimentary rocks, and Quaternary glacial and lacustrine sediments. A description of the stratigraphy of the Fermi 3 site region is in FSAR Subsection 2.5.1.1.3 and site vicinity is described in FSAR Subsection 2.5.1.1.2.3.

### 2.6.3 Soil and Rock Types

A variety of sedimentary rocks, sediments, and soils were encountered during the Fermi 3 subsurface investigation. Material descriptions and geotechnical properties of the soil and rock units are covered in FSAR Subsection 2.5.4.

### 2.6.4 Tectonics and Seismology

Fermi 3 is located in the stable continental region of the North American Craton, which is characterized by low earthquake activity and low stresses. Descriptions of the tectonics and seismology of the site region and site vicinity can be found in FSAR Subsection 2.5.1.1.4, FSAR Subsection 2.5.1.2.4, FSAR Subsection 2.5.1.2.6.6, FSAR Subsection 2.5.2, and FSAR Subsection 2.5.3.

### 2.6.5 Geologic Environmental Impact

Based on the Fermi 3 geologic conditions described in FSAR Subsection 2.5.1, adverse impacts on the geology are not anticipated as a result of the construction or operation of Fermi 3. Items considered in evaluating if Fermi 3 could cause adverse impacts include the following:

- Grouting will be used to control groundwater flow into the excavation for Fermi 3. Grouting will increase the strength of the fractured dolomite bedrock providing a positive effect on the geologic environment.
- If blasting is required, vibrations will be controlled so as to not affect the existing Fermi 2 plant. No off-site effects of blasting are anticipated.
- The excavation for Fermi 3 will remove the glacial till, which acts as an upper confining layer for the bedrock aquifer. The excavation will be backfilled with granular fill, which will result in a hydraulic connection between the groundwater in the fill overlying the glacial till and the groundwater in the bedrock. Similar hydraulic connections currently exist at the following locations on the Fermi site:
  - At Fermi 2, excavation extended into the bedrock and granular fill was used as backfill. Therefore, the backfill approach for Fermi 2 and Fermi 3 is similar.
  - At the Quarry Lakes located southwest of Fermi 3 the overburden was removed, and the bedrock was excavated for use as borrow for Fermi 2.

  These existing hydraulic connections have not created any known adverse impacts to the geologic environment. Under current conditions at Fermi 3, the hydraulic gradient is downward from the groundwater in the fill to the groundwater in the bedrock (FSAR Subsection 2.4.12). The hydraulic connection may locally lower the groundwater level of the groundwater in the fill in the vicinity of Fermi 3.
- The absence of capable faults (FSAR Subsection 2.5.1 and FSAR Subsection 2.5.3) eliminates the possibility for a surface rupture as a result of construction or operation of the proposed facility.
- Surface rebound/settlement during construction of the facility that might affect the drainage of surface water will be limited to the excavation, the Fermi 3 footprint, and immediate surroundings.
- No natural slopes exist in the proximity of Fermi 3 that could be adversely affected by the foundation excavation, loading resulting from construction, and infiltration of precipitation resulting from the excavation or surface modifications.
- Disposal of excavated material might be required either onsite or offsite. Generally accepted methods will be employed to control erosion of this material at the disposal site. Potential methods include silt fences, seeding, and drainage control. Soil surfaces exposed during construction will be protected to mitigate their erosion and control surface runoff.

- Vertical groundwater cut-offs, with technologies such as slurry walls, grout curtains, or freeze walls, will be used to control groundwater migration into the excavation; thus, reducing drawdown of groundwater adjacent to the excavation.

### 2.6.6 References

None.

## 2.7 Meteorology and Air Quality

This section describes the general climate of the Fermi site and the surrounding regional meteorological and air quality conditions. This section also documents the range of meteorological conditions that would likely exist during the construction and operation of Fermi 3. Data presented includes a climatological summary of normal and extreme values of several meteorological parameters recorded by National Weather Service (NWS) meteorological instruments located in Detroit (Detroit Metropolitan Airport) and Flint, Michigan, Toledo, Ohio and the Fermi onsite meteorological station. Supplemental meteorological data from four NWS Cooperative Observation Program (COOP) stations with data sets dating back 30 years or more were also added to the analysis of the region surrounding the Fermi site. Air quality data obtained from the Michigan Department of Environmental Quality (MDEQ) monitors was also used to discuss the regional air quality surrounding Fermi 3. The regional climate and air quality conditions that surround the Fermi site are described in Subsection 2.7.1 and Subsection 2.7.2, respectively. Details regarding severe weather conditions that are observed in the Fermi region are provided in Subsection 2.7.3, while the description of the local meteorology and topographic description for the Fermi site is located in Subsection 2.7.4 and Subsection 2.7.5, respectively. Short- and long-term diffusion estimates of radiation, as they relate to dose concentrations to the public and surrounding area are presented in Subsection 2.7.6.

### 2.7.1 General Regional Climate

The following climatology for Fermi 3 uses data from the NWS first-order stations at Detroit Metropolitan Airport, Toledo, and Flint, as well as four NWS COOP stations located within fifty miles of the Fermi site. The above stations have long return periods of meteorological parameters that provide the regional climatology representative of the Fermi region. The meteorological data obtained for this climatology were collected and processed by the National Oceanic and Atmospheric Administration's (NOAA) Midwestern Regional Climate Center (MRCC) and National Climatic Data Center (NCDC).

Table 2.7-1 contains the distances and directions of the meteorological observing stations relative to the Fermi site as shown in Figure 2.7-1. Detroit Metropolitan Airport is the closest first-order station to the site with a long-term history of recording hourly wind speed and direction, temperature, precipitation, atmospheric moisture content (i.e., dew-point temperature, relative humidity, and wet-bulb temperature), barometric pressure, and the occurrence of weather phenomenon such as thunderstorms and fog (Reference 2.7-1). Flint and Toledo are additional NWS first-order stations with long-term climatological periods of record (Reference 2.7-2 and Reference 2.7-3). Table 2.7-2 through Table 2.7-4 display the various meteorological parameters in the annual Local Climatological Data Summaries (LCD) for Detroit Metropolitan Airport, Flint, and Toledo, respectively. The four COOP meteorological stations used in this climatology have complete or nearly complete data sets that extend back 30 years or greater (Reference 2.7-4 through Reference 2.7-7).

### 2.7.1.1 General Climate

The Fermi site is located along the western Lake Erie shoreline and south of the Detroit metropolitan area. The general climate of the Fermi site and the surrounding region can be described as humid continental, experiencing both warm and humid summers and severe winters. Lake Erie largely influences the overall temperature, wind, and precipitation characteristics of the site and surrounding region. The higher thermal capaCity of the lake moderates the daily temperature extremes that are found further inland, especially during the spring, summer, and fall seasons. Annually, the region experiences approximately six days below 0ºF and only 12 days above 90ºF (Reference 2.7-1). The temperature contrast of the coastal boundary also produces lake and land breezes that are most prominent during the summer in the Fermi region. During the late spring and summer seasons, the lake breezes generally form by afternoon and bring cooler air from above the lake to locations along the shoreline, effectively lowering the daily maximum temperature. During the late summer and fall, land breezes continue the moderation effect by bringing cooler air located further inland to the shoreline areas. At night during the spring, summer, and fall, the lake, with its greater heat capacity, moderates low temperatures along the shoreline. During late December, ice typically forms over the lake and decreases its influence on the coastal areas (Reference 2.7-8). The ice cover during most years thaws by the middle of March, which prolongs cooler temperatures through parts of the spring season for the Fermi region.

The meteorological conditions in the Fermi region are also influenced by the high frequency of surface low pressure systems and cloudiness during the late fall and winter, as well as early spring (Reference 2.7-9). During the later half of spring and summer, the mean track of surface low pressure systems shifts north of the region and the Fermi region experiences an increase in sunshine and warmer monthly temperatures.

Overall precipitation amounts vary slightly from month to month throughout the year (Reference 2.7-1). During the winter, the mean track of surface low pressure systems is positioned over or just south of the Fermi region and increases the frequency of precipitation (Reference 2.7-9). Surface low pressure systems come from the west, northwest and southwest during the winter and bring the possibility of rain, freezing rain, sleet, and snow. Heavy snows are possible throughout the winter and can result in significant accumulations. During the summer, the mean track of surface low pressure systems shifts north of the region, however monthly rainfall values are higher than any other season. The number of days per month with thunderstorms is approximately 6 days during June, July, and August, which is higher than any other months (Reference 2.7-1). Thunderstorms during the summer bring the potential of heavy rainfall and severe weather.

### 2.7.1.2 Normal, Mean, and Extreme Climatological Conditions

This section discusses 30-year normals, as well as long-term means and historical extremes for temperature, water vapor, precipitation, and wind that characterize the meteorological conditions in the region surrounding the Fermi site.

Table 2.7-2 contains long-term normals, means and extremes for Detroit Metropolitan Airport in Detroit, located approximately 17 miles north-northwest of the Fermi site. Table 2.7-3 and

Table 2.7-4 exhibit long-term meteorological information for Flint and Toledo. Flint and Toledo are located 74 miles to the north-northwest and 38 miles southwest of the Fermi site, respectively.

The purpose of this section is to demonstrate that the long-term data reported at the three NWS first-order meteorological stations, as well as the four COOP stations are representative of the short- and long-term climate characteristics of the region surrounding the Fermi site. Subsection 2.7.1.2.1 through Subsection 2.7.1.2.4 provide more detailed discussions of specific meteorological parameters of interest.

#### 2.7.1.2.1 **Wind Conditions**

Based upon 39 years of wind data at Detroit Metropolitan Airport, the annual prevailing wind direction is 240 degrees or southwest (Reference 2.7-1). Monthly prevailing winds in Detroit are generally southwest during all months except during the spring when they are northwest. At Flint and Toledo the annual prevailing wind direction is also southwest (Reference 2.7-2 and Reference 2.7-3), but both stations have different monthly variations when compared to Detroit. Monthly winds for Toledo, like Detroit, are southwest during all but the spring season when they become east-northeast. Monthly wind directions for Flint are also southwest during the majority of the year, however winds become westerly during February and March, east-northeasterly during April, and more southerly during May. The differences in the late winter and spring prevailing wind directions between Detroit and the Flint and Toledo stations can be attributed to the transition of the mean track of surface low pressure systems to the north. During this transition the path of surface low pressure systems greatly varies, and wind patterns across the region can be different. The variation in the path of the surface low pressure systems, as well as the general weakening of the jet stream, can explain the complexity of wind directions at the three first-order stations during the late winter and spring months.

During the most recent 23-year period, the annual mean wind speed for Detroit Metropolitan Airport is 9.9 mph (Reference 2.7-1). In comparison, Flint and Toledo have slightly lower annual mean wind speeds, 9.3 and 9.1 mph, respectively (Reference 2.7-2 and Reference 2.7-3). Seasonally, the highest seasonal mean wind for all three stations is during the winter and spring months as shown in Table 2.7-2 through Table 2.7-4. The lowest seasonal mean wind speed occurs during the summer months for Detroit (8.4 mph), Flint (7.7 mph), and Toledo (7.2 mph). The highest monthly mean wind speed for Detroit occurs in January with a value of 11.6 mph. Flint and Toledo also have their highest monthly mean wind speed during January; however, their values are slightly lower (10.8 mph). During January the mean track of surface low pressure systems is positioned over the Fermi region, which increases the frequency of surface low pressure systems, and therefore wind speeds. The lowest monthly mean wind speed for the three first-order stations is during August when the mean track of surface low pressure systems migrates well north of the region. The overall variation of monthly wind speeds is consistent for the three first-order stations, and therefore these values represent values characteristic of locations in the Fermi region.

Extreme winds for design basis purposes are discussed in Subsection 2.7.3.2. Wind data summaries for the Fermi onsite meteorological station are discussed in Subsection 2.7.4.2 and Subsection 2.7.4.3.

#### 2.7.1.2.2 **Temperature**

Table 2.7-5 presents normal annual temperatures for the three NWS first-order and four COOP stations in the Fermi region during the period 1971-2000. The daily normal temperature for the stations are generally uniform with only minor differences apparent between the two COOP stations closer to the shoreline of Lake Erie and the other stations located further inland or stationed near metropolitan cities. The slight difference in the daily normal temperatures across the Fermi region can be explained by looking at the daily maximum and minimum temperatures. Stations that are closer to the shoreline, specifically Monroe and Windsor, have a slightly higher minimum temperature due to the heat content of Lake Erie. While the other NWS first-order and COOP stations are also influenced by the effects of Lake Erie, Monroe and Windsor are closer to the shoreline and further from metropolitan areas, as a result have slightly higher mean daily minimum temperatures and lower daily maximum temperatures. The observation stations at Detroit Metropolitan Airport are also influenced by the heat island effect that is created by large metropolitan areas. The heat island effect likely explains how the daily minimum temperature for Detroit Metropolitan Airport is warmer than the Monroe and Windsor stations.

During the summer months of June, July, and August, mean daily maximum and minimum temperatures at Detroit Metropolitan Airport average 81°F and 60°F, respectively (Reference 2.7-1). In comparison, at Flint and Toledo summer mean daily maximum temperatures are 80°F and 82°F, respectively, while mean daily minimum temperatures are 56°F and 59°F, respectively (Reference 2.7-2 and Reference 2.7-3). Table 2.7-6 contains climatological extreme maximum and minimum temperatures for the NWS first-order and COOP stations (Reference 2.7-2, Reference 2.7-3, Reference 2.7-5, Reference 2.7-10 through Reference 2.7-14). The highest daily maximum temperature recorded at Detroit Metropolitan Airport was 104°F in June of 1988; however, a temperature of 105°F was recorded in July of 1934 at the nearby Detroit City Airport (Reference 2.7-1 and Reference 2.7-11). The highest temperature recorded at Toledo and Flint is 105°F and 101°F, respectively, occurring in July of 1936 and 1995, respectively (Reference 2.7-2 and Reference 2.7-13). The highest temperature recorded at the NWS COOP sites is 108°F, occurring at the Adrian 2 NNE observation station during July of 1934 (Reference 2.7-10).

During the winter months, the variation of the mean daily minimum temperature is higher between the stations, while the mean daily maximum temperature remains nearly uniform across the region. Mean daily maximum temperatures during the winter at Detroit Metropolitan Airport and Toledo are 34°F, while Flint, which is further north, averages a temperature of 30°F (Reference 2.7-1, Reference 2.7-2, and Reference 2.7-3). The mean daily minimum temperatures for Detroit Metropolitan Airport and Toledo are 20°F and 19°F, respectively. Flint, which is further inland and influenced less by the Great Lakes, has a mean daily minimum temperature of 16°F during the winter season. The major track of surface low pressure systems during wintertime is over the Fermi region, which allows frequent episodes of arctic air (Reference 2.7-9). During a normal winter, there are 45.6 days where the maximum temperature fails to rise above freezing (Reference 2.7-1). However, the Canadian air masses that usher in arctic air to the Fermi region pass over Lake Michigan, which adds heat and moisture to the air mass. The lake effect produced by the Great Lakes produces an excess of cloudiness during the winter and a moderation of the extreme arctic temperatures. Table 2.7-6 summarizes the extreme minimum temperatures recorded at the NWS first-order and COOP station around the Fermi region. The coldest temperature recorded was -26°F at the Adrian 2 NNE station during January of 1892 (Reference 2.7-10). The extreme low values of minimum temperature confirm that the region is exposed to arctic air masses. Furthermore, the stations that are closest to the Lake Erie shoreline have slightly warmer values than those stations further inland, indicating the effect of Lake Erie on extreme temperatures in the Fermi region.

#### 2.7.1.2.3 **Atmospheric Moisture**

Atmospheric moisture in the region surrounding the Fermi site is influenced by Lake Erie and the other surrounding Great Lakes. The content of moisture in the atmosphere is measured through several parameters (relative humidity, dew-point temperature, and wet-bulb temperature) and can be evaluated by looking at the long-term history of the daily, monthly and annual means for the stations in the Fermi region.

<u>Relative Humidity</u>

As shown in Table 2.7-2 through Table 2.7-4, mean annual relative humidity values at Detroit, Flint and Toledo average 71-73 percent (Reference 2.7-1, Reference 2.7-2, and Reference 2.7-3). Nighttime relative humidity is highest in the late summer and early fall and lowest during the spring months. Daytime humidity readings are highest during the late fall and winter seasons. Daily relative humidity values are typically highest around 0700 EST, while lowest relative humidity values occur during early and mid afternoon.

<u>Wet-Bulb Temperature</u>

The mean annual wet-bulb temperature at Detroit Metropolitan Airport is 45.0ºF based upon 23 years of record (Reference 2.7-1). July has the highest mean monthly wet-bulb temperature with a value of 65.9ºF. The lowest monthly mean wet-bulb temperature is 23.7ºF, which occurs in January. Toledo and Flint have mean annual wet-bulb temperatures of 45.5ºF and 43.6ºF, maximum mean monthly wet-bulbs of 66.5ºF and 64.6ºF, and minimum mean monthly wet-bulbs of 24.2ºF and 22.1ºF, respectively (Reference 2.7-2 and Reference 2.7-3). Detroit and Toledo have slightly higher mean annual wet-bulb temperatures than Flint due to their closer proximity to Lake Erie. While Flint is surrounded by the Great Lakes and is approximately 43 miles from Saginaw Bay, it is located further inland than the other first-order stations and can experience lower minimum temperatures.

<u>Dew-point Temperature</u>

Table 2.7-2 provides mean monthly and annual dew-point temperatures for Detroit Metropolitan Airport, indicating a mean annual dew-point of 40.3ºF. In comparison, Table 2.7-3 and Table 2.7-4 show that the mean annual dew-point temperature for Flint and Toledo are 39.4ºF and 41.1ºF, respectively. While the differences in mean annual dew-point are small between the stations, it is apparent that stations that are further south and closer to Lake Erie have slightly higher moisture content. Mean dew-point temperatures for every month at Detroit Metropolitan Airport are lower than the mean dew-point for Toledo, but are higher than the values for Flint. According to Table 2.7-2, Table 2.7-3 and Table 2.7-4 the maximum mean monthly dew-point temperature occurs

in July for all first-order stations. The minimum mean monthly dew-point temperature occurs in January, when the mean monthly temperature is the lowest. During the late winter and spring, the difference in mean monthly dew-point between the first-order stations is greatest, while the differences are smallest during the fall and early winter seasons. It is apparent that the content of atmospheric moisture can be directly correlated to the latitude of the station and, to a smaller extent, the distance from Lake Erie in the region of the Fermi site.

#### 2.7.1.2.4 **Precipitation**

Annual Precipitation

Annual precipitation in the region ranges from just under 30 inches in northeastern Michigan to near 40 inches for the remainder of the state (Reference 2.7-16). Table 2.7-5 presents normal annual rainfall totals for the four COOP and three first-order stations surrounding the Fermi site. Overall, annual rainfall is uniform across the region with the Windsor, Ann Arbor and Adrian stations having the highest annual amounts. The consistent annual rainfall totals for the stations within 50 miles of the Fermi site demonstrates the regional nature of precipitation events.

Monthly Precipitation

Table 2.7-2 displays normal monthly precipitation amounts at Detroit Metropolitan Airport, showing precipitation is fairly consistent throughout the year. Normal monthly precipitation amounts for Flint and Toledo are displayed in Table 2.7-3 and Table 2.7-4 and confirm the uniform nature of precipitation year round. The highest monthly precipitation for Detroit (3.55 inches) and Toledo (3.80 inches) occurs during June, while it is during September for Flint (3.76 inches). The lowest monthly precipitation occurs in February for the three first-order stations when monthly amounts between 1.35 and 1.88 inches are common.

Maximum 24-hour and Monthly Precipitation

Table 2.7-6 displays the maximum 24-hour precipitation amounts recorded for the NWS first-order and COOP stations in the region of the Fermi site. Excessive amounts of precipitation have fallen at all of the observation stations in a 24-hour period. The highest amount of precipitation in a 24-hour period is 6.04 inches, occurring at Flint during September of 1950. For all meteorological stations the 24-hour precipitation amounts occurred between the months of May through September. Table 2.7-6 also contains the maximum monthly precipitation amounts for the meteorological stations surrounding the Fermi site. All maximum amounts of precipitation for the NWS stations occurred between the months of June through August. The highest extreme monthly rainfall occurred at Flint during August of 1975 when 11.04 inches was reported. Earlier it was mentioned that the mean track of surface low pressure systems during the summer months retreats well north of southeast Michigan. While the frequency of surface low pressure systems decreases during the summer season, the intensity of precipitation from thunderstorms contributes to the higher precipitation amounts during the summer months in the Fermi region.

Snow and Ice

Surface low pressure systems during the wintertime can bring a combination of rain, freezing rain, sleet and snow. During a typical year frozen precipitation is possible starting in October and ending in May. Table 2.7-5 presents normal annual snowfall amounts for the meteorological stations surrounding the Fermi site. Normal annual snowfall distributions for the three first-order stations indicate that annual snowfall increases for stations located farther north.

The threat of heavy snowfall is present throughout the wintertime for the Fermi region. Maximum 24-hour snowfall amounts are listed in Table 2.7-6 for each meteorological station. The highest snowfall amount in a 24-hour period is 24.5 inches, occurring near the Detroit City Airport in April 1886. For all meteorological stations listed in Table 2.7-6, the maximum 24-hour snowfall amounts occurred between the months of November through April. Maximum 2- and 3-day snow fall totals were also obtained for the Fermi region from the NCDC United States Snow Climatology online database. The highest 2- and 3-day snowfall reported from the database is 56.6 cm (22.3 inches) occurring at Flint (Reference 2.7-15) The Snow Climatology online database does not include snow records that would capture the maximum 24-hour snowfall that occurred in 1886. Since the maximum 2- and 3-day snowfall, obtained from Snow Climatology online database, is less than the maximum 24-hour snowfall, it is appropriate that the maximum 24-hour snowfall also be the maximum 2- and 3-day snowfall for the Fermi site. The maximum monthly snowfall is 148.6 cm (58.5 inches) which occurred at Ann Arbor during February 1923 (Reference 2.7-10). The remainder of meteorological stations in Table 2.7-6 have maximum monthly snowfall amounts that range between 29.0 and 38.4 inches. While there is much variability among the maximum 24-hour and monthly snowfall amounts, the region surrounding the Fermi site can experience significant snowfalls anytime during the winter season.

## 2.7.2 Regional Air Quality

### 2.7.2.1 Background Air Quality

The Fermi site is located in the northeastern tip of Monroe County and along the western shoreline of Lake Erie. Air quality at the Fermi site is heavily influenced by the Detroit Metropolitan area and surrounding emission sources. The MDEQ evaluates the air quality in the Detroit Metropolitan area with a network of monitors mostly located in Wayne County, north of the Fermi site. The MDEQ routinely monitors the U.S. Environmental Protection Agency (USEPA) criteria pollutants of $NO_2$, $SO_2$, CO, $PM_{2.5}$, $PM_{10}$, and Ozone. While Monroe County is a member of the Metropolitan Interstate Toledo Air Quality Control Region (AQCR), it is also included in the Detroit-Ann Arbor air quality designation area. The Detroit-Ann Arbor air quality designation area is currently classified as a PM2.5 non-attainment area for violations of the 1997 annual standard and the 2006 24-hour standard (Reference 2.7- 17). The county is also currently classified as a maintenance area for the 8-hour ozone standard after being reclassified to attainment on June 29,2009 by the EPA (Reference 2.7-17). Monroe County is in attainment for all other criteria pollutants (Reference 2.7-17). The USEPA as of March 12, 2008 strengthened the definition of ozone non-attainment areas as those that record 8-hour average ozone levels of 0.075 parts per million (ppm) or higher (Reference 2.7-18). For $PM_{2.5}$ the USEPA considers areas in violation of the annual standard when the 3-year average of the weighted annual mean PM2.5 concentration is equal to or exceeds 15 $\mu g/m^3$ and in violation of the 2006 24-hour standard when the 3-year average of the 98th percentile of the 24-hour concentration is equal to or exceeds 35 $\mu g/m^3$.

Maximum concentrations for the 24-hour $PM_{2.5}$ and 8-hour ozone pollutants were obtained from monitors in Monroe and Wayne County. The highest annual $PM_{2.5}$ concentration reported between 1999 and 2006 is 20.1 $\mu g/m^3$, occurring at the Dearborn monitor located west of downtown Detroit and the highest 24-hour $PM_{2.5}$ concentration over this same period is 58 $\mu g/m^3$ (98th percentile) occurring at the Allen Park monitor located southwest of downtown Detroit in Wayne County (Reference 2.7-19). Between 2003 and 2007, the highest 8-hour ozone concentration recorded was 104 ppb (0.104 ppm), measured at the East Seven Mile monitor located in northeastern Wayne County (Reference 2.7-20). The next closest non-attainment area for a USEPA criteria pollutant is Lorain County, Ohio which is part of the Cleveland Metropolitan air shed (also non-attainment for ozone and $PM_{2.5}$), located approximately 60 miles east-southeast of the Fermi site (Reference 2.7-17). There are no Class I Areas that are located within 186 miles of the Fermi site (Reference 2.7-21). Given the minor nature of air emissions associated with operations of Fermi 3 (discussed below), this distance is sufficiently far as to not warrant a concern.

### 2.7.2.2 **Projected Air Quality**

Worker vehicles and various types of construction activities and equipment will lead to releases of the non-attainment and maintenance area pollutants and their precursors (i.e., $PM_{2.5}$, $NO_X$, $SO_2$, or VOC). Since Monroe County is considered a maintenance area for the 8-hour ozone standard and a non-attainment area for $PM_{2.5}$, the Fermi 3 project-related emissions are compared to conformity applicability thresholds provided in 40 CFR 51, Subpart W. Estimated emissions of $PM_{2.5}$, $NO_X$, $SO_2$, and VOC during the construction phase of the project are not expected to exceed the conformity applicability thresholds provided in 40 CFR 51, Subpart W indicating that a conformity determination for the construction phase is not required.

Air emissions of criteria pollutants during operation of Fermi 3 will be minor given the nature of a nuclear facility and its lack of significant gaseous exhausts of effluents to the air. Sources of air emissions for Fermi 3 include two standby diesel generators, two ancellary diesel generators, an auxiliary boiler, and two diesel fire pumps, as well as a natural draft cooling tower (NDCT) and two 4-cell mechanical draft cooling towers (MDCT). The combustion sources mentioned above will be designed for efficiency and operated with good combustion practices on a limited basis throughout the year (often only for testing). Given their small magnitude of size and infrequent operation, these emissions will not only have little effect on the nearby ozone maintenance and $PM_{2.5}$ non-attainment areas, but will have minimal impact on the local and regional air quality as well. Estimated emissions during the operational phase of the project are not expected to exceed the conformity applicability thresholds provided in 40 CFR 51, Subpart W indicating that a conformity determination for the operational phase is not required. The air emissions from the listed equipment are regulated by the MDEQ.

The Fermi 3 cooling towers will not be a source of the typical combustion-related criteria pollutants or other toxic emissions. They will, however, emit small amounts of particulate matter as drift. The towers will be equipped with drift eliminators designed to limit drift to 0.001 percent or less of total water flow. Additionally, the primary normal heat sink (NHS) for Fermi 3 is a NDCT. The height of the tower will allow for good dispersion of the drift and not allow localized concentrations of particulate matter to be realized. The minor nature of the effects of the new cooling towers on visibility and air quality, including potential for increases in ambient temperature and moisture, icing, fogging, and salt deposition, are discussed in further detail in Subsection 5.3.3.1. In addition, Subsection 4.4.1 will discuss the emissions expected during Fermi 3 construction activities, while Subsection 5.8.1 will discuss the emissions expected during operation of Fermi 3, including the estimated work force vehicular emissions.

### 2.7.2.3 **Air Stagnation**

The main components of air stagnation are light winds and weak vertical mixing. Light winds can also be associated with weak or poor horizontal mixing of the atmosphere which has the general effect of leading to restrictive horizontal and vertical dispersion and thus air stagnation (Reference 2.7-22). Along with wind speed, wind direction plays a key roll in horizontal mixing as winds with non-persistent directions can also lead to poor dispersion, especially under light wind speeds when the air may re-circulate. Finally, temperature inversions are also associated with little to no vertical mixing of the atmosphere and, therefore, air stagnation. Analyses of inversions are discussed in Subsection 2.7.2.5 while the persistence of wind speeds and directions are covered in Subsection 2.7.4.3.

Air stagnation episodes typically occur when high pressure systems (anti-cyclones) have a strong influence on the regional weather for four days or more. These systems often lead to generally light winds and little vertical mixing due to a general sinking of the air in their vicinity. The region surrounding the Fermi site can expect approximately 10 days per year of air stagnation, or two episodes per year (Reference 2.7-22). The mean duration of each air stagnation episode typically is three to four days.

Air stagnation conditions primarily occur during the second half of the summer and early fall seasons that runs from July through September. This is a result of the migration of the mean track of surface low pressure systems to areas well north of the Fermi site, which creates weaker pressure and temperature gradients, and therefore weaker wind circulations during this period. Wang & Angell confirm that air stagnation episodes in the region surrounding the Fermi site begin to occur in June and July (Reference 2.7-22). The number of air stagnation episodes reaches a maximum during August before decreasing in magnitude during September and October. During the fall season the mean track of surface low pressure systems moves south and positions itself over southeastern Michigan and increases the frequency of surface low pressure systems and monthly wind speeds, therefore decreasing the possibility of air stagnation (Reference 2.7-9).

### 2.7.2.4 **Mean Monthly Mixing Heights**

The mixing height (or depth) is the height above the surface in which air can freely mix vertically without the help of additional atmospheric forcing mechanisms. George C. Holzworth presented monthly mixing heights for the continental United States based on upper-air data from the period 1960-1964 (Reference 2.7-23). Seasonal morning and afternoon mixing heights for the region surrounding the Fermi site were interpolated from Holzworth's analysis. In general, morning mixing heights are lowest in the summer and fall seasons and highest in the winter season. Afternoon mixing heights are the highest in the summer and lowest in the winter.

The mean annual and monthly mixing heights for White Lake, Michigan, located 52 miles north-northwest of the Fermi site, were calculated using daily morning and afternoon mixing height data obtained from the NCDC (Reference 2.7-24). The NCDC calculated the mixing heights from data recorded during the morning and afternoon release of weather balloons at the White Lake National Weather Service office that measures the vertical temperature and wind information of the atmosphere. Surface wind data from Detroit Metropolitan Airport were used by the NCDC in conjunction with the weather balloon data to create daily mixing heights for the region. The calculated mean monthly and annual mixing heights for White Lake during 2003-2007 are presented in Table 2.7-7. The values shown in the table follow the same trends found by Holzworth (Reference 2.7-23).

#### 2.7.2.5 **Inversions**

The frequency and persistence of temperature inversions may also indicate periods where air stagnation is highest. Frequency and persistence of inversions were calculated annually and monthly utilizing the difference in temperature (ΔT) between the 10- and 60-meter levels obtained from the Fermi onsite meteorological tower data during the period 2003 through 2007. The presence of an inversion was defined as anytime ΔT>0 for the hour. A summary of the frequency and persistence of inversion conditions is presented in Table 2.7-8 which shows for 42,800 hours analyzed during the 5-year period an inversion was present a total of 13,098 hours, equivalent of 30.6 percent of the total hours. Many of the inversions were short-lived as 48.5 percent of all inversions that occurred lasted six hours or less. Almost all the inversions lasted less then 24 hours with only 1.3 percent of all the inversions lasting longer then 24 hours. In the five years of data used, the longest inversion lasted 76 hours. Table 2.7-9 through Table 2.7-20 present the persistence of inversions tallied for each month. These tables show that the inversions are more common during March through October, however, are most prominent during the summer months of June, July, and August. This corresponds well with the findings by Wang & Angell that the number of days with air stagnation is highest during July through September (Reference 2.7-22). The increase in the number of inversions and air stagnation is a result of the jet stream retreating to the north of the Fermi site during the summer months, which in return creates the warmest temperatures and lowest wind speeds (Reference 2.7-9).

### 2.7.3 **Severe Weather Phenomena**

#### 2.7.3.1 **Thunderstorms and Lightning**

Table 2.7-2 indicates that Detroit Metropolitan Airport averages nearly 33 days per year where thunder is at least heard (Reference 2.7-1). The highest seasonal rate of occurrence for thunderstorms is during the summertime (June-August) when around 54 percent of all thunderstorm days occur. July specifically has the highest occurrence of thunderstorms with on average 6.3 days reported. The mean number of thunderstorm days per month is lowest during the late fall and winter seasons, reaching a minimum of 0.2 days per month in January.

The frequency of lightning strikes to earth can be estimated using a method from the Electric Power Research Institute (EPRI). The method is presented by the U.S. Department of Agriculture Rural Utilities Service in a publication titled *Summary of Items of Engineering Interest*. The formula assumes a relationship between the number of thunderstorm days per year (T) and the number of lightning strikes to hit earth per square mile (N) (Reference 2.7-25):

$$N= 0.31T$$

Using the above formula and the previously given average of 33 days of thunderstorms per year, the average number of lightning strikes is then calculated as 10 strikes per square mile per year or nearly four strikes per square kilometer per year for the Fermi region. This calculation compared well with the 1996-2000 flash density map created by Vaisala which indicates that the Fermi site is located in the region that averages around 1-4 strikes per square kilometer per year (Reference 2.7-26).

For a more detailed look at the average number of strikes to occur near the reactor (i.e., within a 1,000 foot radius or 0.113 $mi^2$), the following ratio was applied:

10 strikes/$mi^2$ per year x 0.113 $mi^2$ = 1.13 strikes/year

that may strike near Fermi 3 (within 1,000 feet).

### 2.7.3.2 Extreme Winds and High Wind Events

Extreme Winds

Wind loading on plant structures is estimated using a 3-second wind gust at 10-meters above ground level to create a basic wind speed for regions across the United States. The American Society of Civil Engineers (ASCE) and Structural Engineering Institute (SEI) classify the Fermi region into Exposure Category C (Reference 2.7-27). From the Engineering Weather Data, Version 1.0 CD-ROM, the maximum basic wind speed with a 50 year recurrence interval is 90 mph for Detroit City Airport (Reference 2.7-28). Applying a 50-year to 100-year wind multiplier of 1.07 supplied by the ASCE and SEI in Table C6-7 of SEI/ASCE 7-05 the maximum basic wind speed for the Fermi site increases to 96.3 mph (Reference 2.7-27).

Local and regional records of maximum wind speeds occurring from thunderstorms and other high wind events present values higher than the above maximum basic wind speed. According to the NCDC on-line storm database the highest wind speed recorded for Monroe County is 95.5 mph on May 21, 2004 (Reference 2.7-29). Using the same NCDC on-line storm database, the highest wind speed recorded in the surrounding counties is 103.6 mph, occurring in Wayne and Lucas Counties on July 22, 1960 and July 4, 1969, respectively. For comparison, a maximum 2-minute wind speed of 61 mph along with a corresponding 78 mph 5-second wind gust was recorded at Detroit Metropolitan Airport in May of 2004 (Reference 2.7-1). Wind data records from the LCD for Detroit Metropolitan Airport span back only 11 years. The observed wind speeds from the NCDC database indicate that thunderstorms can produce wind speeds in excess of 100 mph at the Fermi site.

High Wind Events

This section provides the frequency of occurrence of winds greater than 50 knots, in accordance with the Nuclear Regulatory Commission (NRC) Regulatory Guide 4.2. Storm reports that include wind speeds of 50 knots or greater occur with many types of weather phenomenon such as thunderstorms and tornadoes. Wind reports for thunderstorms and tornadoes were obtained from the NCDC on-line storm database for the following five-county area surrounding the Fermi site: Lenawee, Monroe, Washtenaw, Wayne and the Ohio County of Lucas. While not all five counties may have been actively reporting high wind events in the early years of the time period, the 1955-1959 period featured 1.6 high wind events per year. The subsequent 10-year periods of 1960-1969, 1970-1979, and 1980-1989 averaged 2.9, 2.4, and 4.2 high wind events per year respectively. An analysis of the high wind events on a decade by decade basis over the five-county area does not show a significant statistical trend over the first four decades. In fact, the variability in the average number of high wind events per decade over the first four decades may be explained by natural variability as they each reported similar numbers of high wind events.

Furthermore, some of the reported high wind events likely occurred simultaneously in several of the five counties. High wind events can be caused by individual thunderstorms that have a cellular structure or by thunderstorms that have become linear along a squall line or cold front. A line of thunderstorms can cause wind damage along an elongated path, while the wind damage caused by cellular type thunderstorms is typically isolated in nature.

Between January 1, 1955 and December 31, 2007 there have been 816 reports of wind events that were 50 knots or greater in the five-county area (Reference 2.7-29). The highest wind speed reported was 90 knots (103.6 mph) in Wayne and Lucas Counties on July 22, 1960 and July 4, 1969. Many of the reports for high winds contained in the NCDC on-line storm database do not specify wind speeds and therefore may underestimate the count of wind events 50 knots or greater in the region of the Fermi site.

Between January 1, 1950 and December 31, 2007, 110 tornadoes were reported in the five-county area (Reference 2.7-29). All tornadoes are categorized as F0 or stronger on the Enhanced Fujita (EF) scale, thereby containing wind speeds greater than 50 knots (Reference 2.7-30). Additional discussion of tornadoes in the region surrounding the Fermi site is given in Subsection 2.7.3.3.

### 2.7.3.3 Tornadoes and Waterspouts

Waterspouts

Waterspouts are considered to be the counterpart of tornadoes, but over large bodies of water. Waterspouts are also much smaller than an average tornado and contain wind speeds that are typically less than 50 mph. Conditions favorable for waterspout formation are when a cool air mass passes over the warm waters of Lake Erie. The resulting instability can support the formation of waterspouts, most frequently during the late summer and fall season. A search for reported waterspouts in the NCDC online storm database resulted in eight occurrences off the shoreline of Lucas and Monroe counties since 1993 (Reference 2.7-29). The closest occurrence to the Fermi site was a report of several waterspouts off the shoreline of Stony Point in Monroe County on the morning of July 26, 1998 (Reference 2.7-31). Therefore, waterspouts can occur near and at the Fermi site, but are not considered to be of frequent occurrence.

Tornadoes

"Design-Basis Tornado (DBT) and Tornado Missiles for Nuclear Power Plants" (Regulatory Guide 1.76) published in March 2007, was used to determine the design parameters that should be considered in the event that the most severe tornado strikes the Fermi site. In addition, DBT wind speeds for the Fermi site, utilizing information from the "Tornado Climatology of the United States" (NUREG/CR-4461 Rev. 2) published in February of 2007 are presented here. NUREG/CR-4461 Rev. 2 is an update to Rev. 1 that recalculated the tornado climatology using the EF scale for the time period of 1950 through August 2003. The relationship of the damage intensity to the tornado maximum wind speed in the new EF scale is as follows (Reference 2.7-30):

| | |
|---|---|
| EF0 | 65-85 mph |
| EF1 | 86-110 mph |
| EF2 | 111-135 mph |
| EF3 | 136-165 mph |
| EF4 | 166-200 mph |
| EF5 | 201+ mph |

The EF scale uses the fastest 3-second wind speeds as opposed to the fastest quarter mile wind speeds used in the original Fujita Scale. The result of this new methodology is lower DBT maximum wind speeds as shown in Table 1 of Regulatory Guide 1.76. NUREG/CR-4461 Rev. 2 also introduces a term to account for the finite dimensions of structures as well as the variation of wind speed along and across the tornado footprint. The seven DBT values deemed critical by Regulatory Guide 1.76 when designing nuclear facilities are as follows:

- Tornado Strike Probability
- Maximum Wind Speed
- Translational Speed
- Maximum Rotational Speed
- Radius of Maximum Rotational Speed
- Pressure Drop
- Rate of Pressure Drop

Tornado Strike Probability

NUREG/CR-4461 Rev. 2 divides the United States into 2-degree latitude/longitude boxes containing the number of tornado events reported from 1950 through August 2003. Figure 5-7 of NUREG/CR-4461 Rev. 2 shows that the Fermi site is located near the center of the 2-degree box bound between the 82 degree and 84 degree West longitudes and the 41 degree and 43 degree North latitudes. Adjacent 2-degree boxes to the west and southwest contain significantly higher numbers of tornado events. However, the 2-degree box that contains the Fermi site includes Lake

Saint Clair and western parts of Lake Erie, which may explain the decreased number of tornado events. In order to calculate the strike probability specifically for the Fermi site, a 2-degree latitude/longitude box centered on the location of the Fermi site was chosen to mirror the 2-degree box presented in NUREG/CR-4461 Rev. 2. A 2-degree box centered on the Fermi 3 reactor provides a conservative basis for calculating the probability of a tornado striking the Fermi site. Guidelines for calculating strike probability are presented in NUREG/CR-4461 Rev 2. Following the NUREG/CR-4461 Rev. 2 methodology, the strike probability for a point structure in any given year is given by:

$P_p = A_t / NA_r$

Where:

$P_p$= Tornado strike probability for a point structure per year, regardless of wind speed

$A_t$= Total area impacted by tornadoes within a region of interest in N years

N = Number of years of tornado record

$A_r$= Area of the region of interest

The 2-degree latitude/longitude box is based on the centerline of the Fermi 3 reactor vessel. The 2-degree box encompasses 13 counties in Michigan, 17 counties in Ohio, and three counties in the Canadian Province of Ontario that are either fully or partially inside the box. The number of tornadoes occurring in the 2-degree box was obtained from the NCDC on-line storm database and Environment Canada database for the 54-year period of January 1, 1950 through December 31, 2003. As shown below, the number of tornadoes for each EF scale class is displayed. On average 9.83 tornadoes per year occurred in the 2-degree box based on the 531 tornadoes that were reported during the 54-year period (Reference 2.7-29 and Reference 2.7-32). The total area impacted by tornadoes in the 2 degree box, shown below, can be found by multiplying the number of tornadoes in each EF scale class by the expected values for tornado segment statistics in the central United States found in Table 2-10 of NUREG/CR-4461 Rev. 2.

| | F0 | F1 | F2 | F3 | F4 | F5 | Total |
|---|---|---|---|---|---|---|---|
| Number of Tornadoes | 172 | 193 | 120 | 26 | 19 | 1 | 531 |
| Expected Value of Tornado Area ($mi^2$) [(a)] | 0.0341 | 0.3374 | 1.1784 | 3.0857 | 4.7263 | 6.0152 | |
| Total Tornado Area ($mi^2$)=$A_t$ | 587 | 65.12 | 141.41 | 80.23 | 89.80 | 6.02 | 388.43 |

a) From Table 2-10, NUREG/CR-4461, Rev. 2

The total area of the 2-degree box is calculated by summing the areas of Michigan, Ohio, and Canadian counties inside the 2-degree box. County areas provided from the U.S. Census Bureau and Canada's National Statistical Agency estimates a total area of 18,583.87 $mi^2$ (Reference 2.7-33 and Reference 2.7-34). Using a total tornado area of 388.43 $mi^2$ ($A_t$), a 2-degree box area of

18,583.87 mi$^2$ ($A_r$), and a time period of 54 years (N), the calculated strike probability ($P_p$) for the Fermi site becomes 3.87 X $10^{-4}$ or a recurrence interval of once every 2584 years.

In comparison, Table 5-1 in NUREG/CR-4461 Rev. 2 shows the calculated probability of a tornado striking any point in the central United States as 3.58 X $10^{-4}$ or a recurrence interval of once every 2793 years. The results demonstrate that the statistics for the 2-degree boxes centered on the Fermi site provide a more accurate estimate of the probability of a tornado striking the Fermi site rather than utilizing the generalized value for the central United States.

Regulatory Guide 1.76 defines DBT characteristics for nuclear power plants that have a tornado strike probability greater than 1.0 X$10^{-7}$. The calculated Fermi site tornado strike probability of 3.87 X$10^{-4}$ exceeds the above probability threshold which requires the Fermi 3 to meet the design requirements of Regulatory Guide 1.76. Table 1 from Regulatory Guide 1.76 presents the remaining six DBT characteristics for new reactors located in the United States whose tornado strike probabilities exceed the 1.0 X $10^{-7}$ threshold. According to Table 1, since the Fermi site is located in Region I, the DBT characteristics are as follows:

| DBT Characteristics | Fermi site [a] |
|---|---|
| Maximum wind speed (mph) | 230 |
| Translational speed (mph) | 46 |
| Maximum rotational speed (mph) | 184 |
| Radius of maximum rotational speed (ft) | 150 |
| Pressure drop (psi) | 1.2 |
| Rate of pressure drop (psi/sec) | 0.5 |

a) From Table 1 of Regulatory Guide 1.76

#### 2.7.3.4 **Hail**

A study authored by Joseph T. Schaefer estimates that the 1 x 1 degree box surrounding the Fermi site averages 16.5 reports of severe hail (hail diameter ≥ 0.75 inches) per year (Reference 2.7-35). Schaefer's study examined hail reports from the period 1955-2002. In order to include the most recent five years, hail reports were obtained from the NCDC on line storm database for the Michigan Counties of Lenawee, Monroe, Washtenaw, Wayne, and the Ohio County of Lucas. The five-county area surrounding the Fermi site reported 576 severe hail events over a 53-year period of January 1, 1955 through December 31, 2007 producing an average of 10.9 occurrences of severe hail per year, which is somewhat lower than the findings by Schaefer (Reference 2.7-29). However, the total area of the five-counties is less than that of the 1 x 1 degree box used by Schaefer, and thereby explains the difference among the two estimates.

Out of the 576 severe hail reports, 87 were reported as large hail (hail diameter ≥ 1.75 inches) (Reference 2.7-29). The largest hail report was 4.00 inches, occurring in Wayne County on November 13, 1955 and Monroe County on March 27, 1991. Figure 2.7-2 shows the distribution of severe hail events for each month. The majority of hail events in the five-county area occur during the months of May, June, and July. During the 53 year period there were no reports of hail during the winter months of December and January. Figure 2.7-3 provides the distribution of hail events across each of the five counties. The counties surrounding Monroe County and the location of

Fermi 3 contain higher occurrences of severe hail events. While not all five counties may have been actively reporting severe hail events between 1955 and 1959, there was an average of 2.0 severe hail events reported per year in the five-county area during this period. By comparison between 1960 and 1979, a period when all five counties were included in the reporting of severe hail events, an average of 1.9 severe hail events per year were reported over the same five-county area for the period between 1960 and 1969 and an average of 2.2 severe hail events per year were reported over the same five-county area for the period between 1970 and 1979. The overall frequency of hail reports has steadily increased during the last few decades. It is reasonable to assume the increase may be explained by the improved technology of Doppler radars, cell phones, and the increased public awareness of reporting hail events (Reference 2.7-35).

#### 2.7.3.5 **Ice Storms**

Freezing rain is defined as an accretion of ice resulting from liquid precipitation striking a frozen surface (e.g., tree branches or power lines) and freezing. Typically the liquid droplets are supercooled droplets falling through an air layer of sub-freezing temperatures, during their descent to the ground. The weight of the ice accretion on surface objects can become sufficient to cause damage to trees and power lines, as well as slow down or even halt transportation on ice covered roads and bridges. The surface air temperature during most freezing rain events typically ranges between 25ºF and 32ºF (Reference 2.7-36). Ice pellets are also a common occurrence at the Fermi site during wintertime storms. Ice pellets are created when a snowflake melts during its descent to the ground, but then refreezes as it falls through a sub-freezing air layer near the surface.

<u>Frequency of Occurrence</u>

Cortinas et al. analyzed freezing rain and ice pellets events for the Fermi region during the period 1976-1990 (Reference 2.7-37). In particular, freezing rain and ice pellet events are most common from December to March, although a few events have occurred in November and April. The Fermi site averages approximately 4-5 days per year when an observation of freezing rain has occurred, while ice pellets are reported four days per year.

Ice storm reports were obtained from the NCDC on-line storm database in order to estimate the frequency of occurrence and duration of freezing rain events at the Fermi site. A total of 24 freezing rain events were reported in the five-county area surrounding the Fermi site during the period 1993-2007 (Reference 2.7-29). Table 2.7-21 displays the dates of the freezing rain events and the reported accumulations. In some cases amounts of freezing rain amounted to only a trace or were not available from the storm data records. From the data the frequency of freezing rain events during the 15-year period is 1.6 events per year (24 events/15 years). The highest ice accumulation displayed in Table 2.7-21 occurred during March 13, 1997 when a major ice storm struck southeastern Michigan and deposited ice accumulations of 1.5-2.5 inches from Detroit to Ann Arbor and south to the Ohio-Michigan state line. A general search for ice storms in the five-county area prior to 1993 resulted in an ice storm producing a higher amount. During January 26-27, 1967 a storm produced freezing rain and sleet that lasted nearly 24 hours and ice accumulations of up to 3 inches across northwestern Ohio and parts of southern Michigan

(Reference 2.7-38). The Fermi site and surrounding region is characterized by frequent ice storms that have the potential of producing significant ice accumulations during the winter and early spring.

#### 2.7.3.6 Drought

Monthly values of precipitation are nearly consistent throughout the year in the region surrounding the Fermi site; however, droughts do happen from time to time. A good way to analyze periods where droughts may have occurred is to analyze the extreme dry stretches over a period of time. In order to find the extreme dry periods, hourly precipitation data was analyzed for Detroit Metropolitan Airport during the period 1961-2007. During a stretch from June 17 through July 13, 1963 (644 hours or 26.8 days), the Detroit Metropolitan Airport recorded no measurable precipitation (Reference 2.7-39 through Reference 2.7-41). This was the longest dry stretch that occurred during the 1961-2007 time period. A useful tool that assesses the severity of drought conditions is the Palmer Drought Index (PDI) (Reference 2.7-42). According to an analysis performed by the NCDC, 10 extreme droughts (PDI values of less than -4.0) have occurred in Michigan between 1900 and February 2008 (Reference 2.7-43). One of the episodes of extreme drought corresponds with the longest dry stretch observed at Detroit Metropolitan Airport during June of 1963. Overall the frequency of extreme droughts has decreased since 1940.

### 2.7.4 Local Meteorology

Measurements from the Fermi onsite meteorological tower, located approximately one-quarter mile from the Fermi 3 reactor building, will be used in this section to characterize the local meteorology conditions at the Fermi site. The onsite meteorological tower (the details of which are contained in Section 6.4) collects wind speed, wind direction, dew-point temperature, precipitation, and the ambient temperature at the 10-meter and 60-meter levels. The meteorological monitoring system uses the vertical temperature difference ($\Delta T$) between the 10- and 60-meter levels to compute the atmospheric stability. The hourly averages of wind speed and direction, as well as the estimated atmospheric stability collected from the onsite tower are archived in a digital format that meets the format described in Appendix A of Regulatory Guide 1.23. Hourly data from the most recent five years (2003 through 2007) was obtained in order to perform the analysis of the local meteorology of the Fermi site. Data recovery rates for all meteorological parameters collected at the Fermi onsite meteorological station are greater than 94 percent. Wet-bulb temperature, relative humidity, and the occurrence of fog and visibility are not collected at the Fermi onsite meteorological station; however, data from the nearby Detroit Metropolitan Airport has been used to supplement Fermi site data. Extreme values of temperature, rainfall, and snowfall have also been obtained for several COOP stations within a 50-mile radius of the Fermi site since those parameters are better representative from a regional perspective.

#### 2.7.4.1 Normal, Mean, and Extreme Values

Regional normal, mean, and extreme values of temperature, wind, moisture and precipitation were discussed in Subsection 2.7.1.1. In order to demonstrate that the long-term data reported at the NWS first-order meteorological stations are representative of the Fermi site, this section provides a more comprehensive analysis of these parameters in comparison with the conditions at the Fermi site.

#### 2.7.4.1.1 **Temperature**

Table 2.7-22 presents mean monthly and annual temperature for the 10- and 60-meter levels at the Fermi site, as well as the 10-meter temperature at Detroit Metropolitan Airport. In order to show the comparison of temperature at Detroit Metropolitan Airport and the Fermi site, temperature data is analyzed for a 5-year period during 2003 through 2007. From Table 2.7-22, it is apparent that while mean annual temperatures are comparable, the mean monthly values can be considerably different at the Fermi site. The reason they are different can be explained by comparing the locations of the two stations. The Fermi site is located along the shoreline of Lake Erie and experiences moderating effects resulting from the onshore and offshore lake breezes, the higher heat capaCity of the lake, and the wintertime lake ice cover. During the wintertime, Lake Erie generally becomes ice covered by the middle of December (Reference 2.7-8). During this period, the ice over Lake Erie shuts off the moderating effects of the water’s higher heat content. As a result, the air over the lake fluctuates in temperature as land does and mean monthly temperatures for December, January, and February between the two stations are nearly identical. During the spring, the lake ice melts by the middle of March, but the water temperatures remain cold (Reference 2.7-8). This results in cooler temperatures at the Fermi site when compared to the farther inland Detroit Metropolitan Airport. As the lake water warms up during the summertime, the lake produces a moderating effect on temperatures due to its higher heat capacity, and temperature differences along the shoreline produce onshore and offshore lake breezes. As a result, monthly temperatures remain slightly cooler at the Fermi site in comparison with the Detroit Metropolitan Airport. Lake temperatures remain warm through the fall season and the heat capacity effect helps keep monthly temperatures warmer at the Fermi site. The mean monthly and annual temperatures for the Fermi site are slightly different than those for Detroit Metropolitan Airport due to the effects of being on the Lake Erie shoreline. However, these effects are small when comparing the overall closeness of the mean annual temperatures for the Fermi site and Detroit Metropolitan Airport. Therefore, the mean annual temperatures of the Detroit Metropolitan Airport are characteristic of the temperature conditions for the Fermi site for longer climatological periods.

Long-term climatological values of temperature for Detroit Metropolitan Airport are presented in Subsection 2.7.1.2.2 and summarized in Table 2.7-2 and Table 2.7-5. As shown in Table 2.7-2, the mean daily temperature for the 48-year period is 49.2ºF. Mean daily maximum temperatures are highest in July (83.3ºF) and lowest in January (31.0ºF). Mean daily minimum temperatures are highest in July (62.1ºF) and lowest in January (16.9ºF). To illustrate the extreme maximum and minimum values of temperature which are characteristic of the Fermi site, hourly temperature data was analyzed for the first-order and COOP stations. Table 2.7-6 presents extreme values of temperature in the region surrounding the Fermi site. The table shows that temperatures have risen as high as 108ºF and dropped as low as -26ºF in the region surrounding the Fermi site. In general, the Fermi site is vulnerable to both extreme heat in the summer and arctic cold temperatures during the winter months.

#### 2.7.4.1.2 **Atmospheric Moisture**

Subsection 2.7.1.2.3 discussed the long-term monthly and annual characteristics of dew-point, relative humidity, and wet-bulb temperature in the Fermi region. It also was discovered that the magnitude of atmospheric moisture content for stations in the Fermi region is directly related to the latitude of the station and, to a smaller extent, the distance from the Lake Erie shoreline. This relationship indicates that moisture parameters at Detroit Metropolitan Airport, only 17 miles north-northwest from the Fermi site, are representative of the conditions at the Fermi site.

Atmospheric moisture content at the Fermi site is influenced by Lake Erie and the other Great Lakes. Table 2.7-2 provides annual and monthly values of relative humidity and wet-bulb temperature for Detroit Metropolitan Airport. The values in Table 2.7-2 can be used to describe the long-term characteristics of relative humidity and wet-bulb temperature at the Fermi site.

Table 2.7-23 contains annual and monthly summaries of dew-point temperature calculated from data obtained from the Fermi onsite meteorological tower for the time period 2003-2007. During the 5-year period the mean annual dew-point temperature for the Fermi site is 37.6ºF. As would be expected, the mean monthly dew-point temperature values are highest during July and August (58.1°F) and lowest in February (15.7°F). Extreme values of dew-point temperature are also displayed in Table 2.7-23. The highest dew-point temperature measured at the Fermi site is 74.7ºF corresponding with the summer season, while the lowest dew-point temperature of -21.8ºF occurred during the winter season. The last column in Table 2.7-23 shows that mean monthly diurnal variations in dew-point vary the least during the summer and early fall when mean dew-point temperatures are the highest.

#### 2.7.4.1.3 **Precipitation**

The Fermi onsite meteorological station measures rainfall and the liquid equivalent of snowfall on a daily basis. During the process of analyzing the Fermi site precipitation data, it was discovered that the precipitation sensor malfunctioned several times during the 2003-2007 period, resulting in much higher annual precipitation amounts than observed at surrounding observation stations. For this reason, precipitation records for Detroit Metropolitan Airport will be used in this section to describe the precipitation characteristics of the Fermi site. Detroit Metropolitan Airport is the nearest first-order station that has a long period-of-record for reporting precipitation. Normal annual and monthly rainfall values were discussed in Subsection 2.7.1.2.4 and summarized in Table 2.7-2 and Table 2.7-5. These tables indicate that the Fermi region is annually characterized as having consistent precipitation amounts during the year and routine wintertime snowfall. These values are reasonably uniform over the region as to indicate that these stations are representative of precipitation averages that would be observed at the site.

<u>Maximum 24-Hour and Monthly Precipitation</u>

Maximum 24-hour and monthly precipitation totals for the region are discussed in Subsection 2.7.1.2.4 and summarized in Table 2.7-6 for the NWS first-order and COOP stations presented in the Fermi region. The highest 24-hour precipitation amount is 6.04 inches, occurring during September 1950 at Flint (Reference 2.7-2). The highest monthly precipitation was also observed at Flint with an amount of 11.04 inches during August 1975. The maximum precipitation values are reasonably uniform across the area given that precipitation can be highly influenced by individual thunderstorms which can be local in nature hitting one station and not another. It is therefore considered that the precipitation data are representative of precipitation extremes that might be observed at the site.

Total Hours of Precipitation and 1-Hour Precipitation Rate Distribution

Hourly precipitation data for Detroit Metropolitan Airport was obtained from the NCDC for the most recent 5-year time period (2003-2007) to identify the precipitation intensity frequencies in the region surrounding the Fermi site (Reference 2.7-44). Detroit Metropolitan Airport is the closest NWS first-order station that has reliable precipitation records and as discussed above is representative of the precipitation trends at the Fermi site. Table 2.7-24 presents the distribution of hourly precipitation amounts in various intensity categories for each month during the 2003-2007 timeframe. Precipitation was recorded approximately 15.95 percent of the time during the 5-year period. January has the highest occurrence of hourly precipitation while September has the lowest. This corresponds with the location of the mean track of surface low pressure systems, which is over the southeast Michigan during the winter and well north of the region during the summer and early fall seasons. Additionally, as expected, precipitation is most frequent in lighter intensity categories with the majority of hourly precipitation having accumulations less than 0.10 inches.

Precipitation Wind Roses

Monthly and annual precipitation roses for Detroit Metropolitan Airport were created to correlate hourly precipitation with wind direction for the Fermi region during the 2003-2007 timeframe and are presented in Figure 2.7-4 through Figure 2.7-16. A randomization scheme using EPA's computer program PCRAMMET was applied to the hourly wind direction data used to create the precipitation roses to eliminate the typical concentration toward the four cardinal directions (i.e., N, E, S, and W). As shown in Figure 2.7-4, annually, the majority of hourly precipitation events, regardless of intensity, occur when winds are from the east and east-northeast with secondary maximum occurring equally from the north and south directions. As can be seen in both Table 2.7-24 and Figure 2.7-4, a significant amount of the hourly precipitation events were less than 0.10 inches. In addition, it appears from the annual precipitation rose that winds from the southwest and south-southwest yield the highest percentage of hourly rainfall events with intensities greater than 0.50 inches.

Snowfall

Mean annual snowfall, as well as 24-hour snowfall and maximum monthly values were discussed in Subsection 2.7.1.2.4. Table 2.7-5 and Table 2.7-6 present climatological normal and extreme values of snowfall, respectively, for the first-order and COOP stations in the region of the Fermi site. As indicated in these tables, annual amounts of snow vary greatly amongst the stations, and the region is characterized by heavy snow events. The highest 24-hour snowfall is 24.5 inches at the Detroit City Airport located north-northeast of the Fermi site, occurring during April 1886 (Reference 2.7-11). The highest 2- and 3-day and maximum monthly snowfall is 22.7 inches and 58.5 inches, respectively, which occurred at Flint and Ann Arbor, respectively (Reference 2.7-10 and Reference 2.5-16).

#### 2.7.4.1.4 Fog and Heavy Fog

Fog

Fog is reported at NWS first-order stations when the horizontal visibility is less than or equal to 6 miles and the difference between the temperature and dew-point is 5°F or less. Detroit Metropolitan Airport is the nearest NWS station that routinely observes visibility and fog. Detroit Metropolitan Airport is located 17 miles north-northwest of the Fermi site and has a similar elevation and relative proximity to Lake Erie. Table 2.7-25 displays the mean annual, mean monthly, and frequency of hours that reported fog during the period 1961-1995 (Reference 2.7-39 and Reference 2.7-40). On an annual basis, fog occurs 12.7 percent of the hours during a calendar year (1112 hours). The highest monthly averages occur during November and December when 14.8 percent (107 hours) and 17.4 percent (130 hours) of total monthly hours, respectively, report fog. Fog is least frequent during June and July when fog only occurs 65 and 69 hours per month, respectively.

Heavy Fog

Mean annual and monthly values of hours with heavy fog, as well as frequency of hours of heavy fog are presented in Table 2.7-25. Heavy fog is defined as a horizontal visibility less than or equal to 0.25 miles. Annually, Detroit Metropolitan Airport averages 60.2 hours per year where heavy fog is reported. Heavy fog most frequently occurs December through March when 8 to 11 hours per month report heavy fog. During April through July, heavy fog is least likely to occur since only 1 to 2 hours each month report heavy fog.

### 2.7.4.2 Wind Direction and Wind Speeds

Wind direction and speed are two of the main components that define the dispersion characteristics of a site. Wind speed and direction can be classified on macro, synoptic, meso, or micro spatial scales. Macro and synoptic scales typically cover areas of 40 to 4,000 $mi^2$ (100 to 10,000 $km^2$). The influences on these two scales include features such as oceans and other large bodies of water, continents, and mountain ranges.

Meso and micro scale features better represent the general wind characteristics of the Fermi site and surrounding region. Meso-scale features typically cover areas of 0.4 to 40 $mi^2$ (1 to 100 $km^2$) and are influenced by such things as local vegetation and river valleys. Micro-scale features are spatially 0.4 $mi^2$ (1 $km^2$) or less and include the proximity of the Fermi onsite meteorological tower to the Fermi 3 cooling tower, Lake Erie, and general site specific land use characteristics of the immediate location.

The influence of these smaller scale features may be seen by evaluating local wind data both at the Fermi site and the nearby Detroit Metropolitan Airport. Table 2.7-26 presents the mean monthly and annual wind speeds at the Fermi site and Detroit Metropolitan Airport. The mean annual wind speed for the 10- and 60-meter level at the Fermi site is 6.57 mph and 12.74 mph, respectively. The mean annual wind speed at Detroit Metropolitan Airport is 8.75 mph at the 10-meter level (Reference 2.7-41). The difference in the wind speeds between Detroit Metropolitan Airport and the 10-meter level at the Fermi site can be explained by the macro and micro-scale features such as the land use characteristics of the site. Detroit Metropolitan Airport lies in a suburban area of Detroit that is relatively flat and provides a broad sample of prevailing wind direction and speed of the region. The Fermi site is located along the western shoreline of Lake Erie and is influenced by onshore and offshore lake breezes, which can have the effect of altering the wind speed and direction at the Fermi site when compared to stations further inland. Furthermore, the meteorological tower is located east of a grove of trees that is located less than ten times the obstruction height recommended in Regulatory Guide 1.23. The potential impact of the trees, for upwind sectors (i.e., west-southwest clockwise to north-northwest sectors), is to reduce the indicated wind speed at the 10 meter elevation, especially when the frequency of winds from upwind sectors is the highest. This occurs during late fall, winter, and early spring months when the jet stream is located over southeastern Michigan, which coincides with the largest difference of wind speeds at the 10 meter elevation between the Fermi site and Detroit Metropolitan Airport. Wind speeds at the 60-meter level are considerably higher than wind speeds at the 10-meter level for the Fermi site and Detroit Metropolitan Airport. This can be attributed to the higher exposure height of the instrument which measures wind speeds that are less reduced by the frictional effect of the earth's surface.

Wind Roses-Detroit Metropolitan Airport

Figure 2.7-17 through Figure 2.7-29 contain the 10-meter annual and monthly wind roses presenting the distribution of wind speed at 22.5 degree intervals for Detroit Metropolitan Airport during the 5-year period of 2003-2007 (Reference 2.7-41). A randomization scheme using EPA's computer program PCRAMMET was applied to the hourly wind direction data used to create the precipitation roses to eliminate the typical concentration toward the four cardinal directions (i.e., N, E, S, and W).

The annual wind rose plot in Figure 2.7-17 shows that winds at Detroit Metropolitan Airport predominantly blow from southwesterly directions. According to the annual 2006 LCD, the prevailing wind direction for Detroit Metropolitan Airport is from 240 degrees (west-southwesterly) (Reference 2.7-1). Monthly wind roses for Detroit Metropolitan Airport are presented in Figure 2.7-18 to Figure 2.7-29. The transition is apparent from dominant northwesterly and northerly winds during the spring months to southwesterly wind directions during the summer through fall months as the Bermuda High develops over the southeast United States and the mean track of surface low pressure systems shifts north of the Fermi region. During May through September, the number of calm hours increase and the wind directions often become light and variable, corresponding with the months having the highest number of air stagnation episodes (Reference 2.7-22). Detroit Metropolitan Airport considers calm hours as those with wind speeds less than three knots. As the mean track of surface low pressure systems begins to move south and closer to southeastern Michigan during late the fall and winter, northwesterly and westerly wind directions become more frequent.

Wind Roses-Fermi 10-meter Level

Annual and monthly wind roses for the 10-meter level at the Fermi site are depicted in Figure 2.7-30 through Figure 2.7-42. These figures show wind speeds and directions at 22.5 degree intervals by direction at the Fermi site for the 2003 through 2007 time period.

Figure 2.7-30 indicates that annually winds are southwesterly most often, occurring approximately 10 percent of the time. Winds with a northwesterly component are the second most common direction for the 10-meter level at the Fermi site. Apparent is the increase of easterly and southeasterly winds annually at the Fermi site when compared to Detroit Metropolitan Airport at the same level. During the spring, summer, and early fall, onshore lake breezes occur frequently at the Fermi site. The breezes form as air temperatures over land heat up faster than the air above the waters of Lake Erie. By afternoon a sharp temperature difference forms along the shoreline and a wind circulation develops that produces easterly through southeasterly winds at the Fermi site. Onshore lake breezes can also increase wind speeds along the shoreline, while inland stations are experiencing lighter winds. Also noticeable on the annual wind rose for the Fermi 10-meter level are the high occurrence of winds less than four knots. The wind roses for the Fermi site consider calm hours as those with wind speeds less than 1 knot, partially explaining the large drop in percentage when compared to annual calm hours at Detroit Metropolitan Airport. Furthermore, the meteorological tower is located east of a grove of trees that is located less than ten times the obstruction height recommended in Regulatory Guide 1.23. The potential impact of the trees, for upwind sectors (i.e., westsouthwest clockwise to north-northwest sectors), is to reduce the indicated wind speed at the 10 meter elevation. Figure 2.7-31 through Figure 2.7-42 present the monthly wind roses for the 10-meter level at the Fermi site. In general, the dominant wind patterns for each month at the Fermi site are very similar to those for the Detroit Metropolitan Airport. However, the tables for March through October at the Fermi site 10-meter level show the increase in easterly through southeasterly wind directions that are a result of onshore lake breezes.

Wind Roses-Fermi 60-meter Level

Figure 2.7-43 presents the annual wind rose at the 60-meter level for the Fermi site. Apparent is the similarity of the Fermi site 60-meter annual wind rose for the Detroit Metropolitan Airport 10-meter level. East through southeast winds remain higher at the Fermi site in comparison to Detroit Metropolitan Airport due to the occurrence of the onshore lake breeze. The wind speeds, as expected, are somewhat higher at all directions as compared to the lower 10-meter tower since the higher level can capture wind speeds that are less affected by the frictional effects of the earth's surface. Monthly wind roses for the 60-meter level are represented by Figure 2.7-44 through Figure 2.7-55. As expected, wind speeds become somewhat lighter during from May to September, as the Bermuda High over the southeast United States influences the region. During the late spring and summer months, the onshore lake breezes produce the easterly through southeasterly winds. As the normal daytime temperatures begin to become cooler during September and October, the waters of Lake Erie remain relatively warm, creating a strong temperature gradient along the coastline. As explained earlier, a wind circulation develops; however, since the air above Lake Erie is warmer, winds blow from the land towards the water. The monthly wind roses for September and October indicate the presence of the offshore winds with a higher frequency of west and west-northwest winds. By mid-December the temperatures of the lake reach freezing temperatures and ice forms, ending the possibility of offshore winds. The minor differences of the wind direction and speed due to the land and lake breezes shown in the 10- and 60-meter wind roses and the similarity of the dominant wind directions across the region indicate that the wind conditions described in this section accurately depict the diffusion conditions for the Fermi site.

### 2.7.4.3 **Wind Persistence**

Persistence of wind direction is a measurement of the duration of the transport of air from a specific direction to locations downwind. It reflects the possible amount of time that radioactive contamination or any other type of pollution may travel in the same or a similar direction. The dilution potential of the pollutant as it moves downstream of its source is directly proportional to wind speed. Higher wind speeds lead to increased dilution while lower wind speeds create less dilution.

Table 2.7-27 through Table 2.7-50 show the persistence of wind direction and speed at both the 10-meter and 60-meter tower levels, respectively, for 22.5 degree (single) and 67.5 degree (three adjoining) wind sector widths for various wind speeds at the Fermi site during the 5-year period of 2003 through 2007. The longest recorded single sector persistence was from the north and southwest (31 hours) for the 10-meter level and from the west-southwest direction (36 hours) for the 60-meter level. For three adjoining sectors, the 10-meter level and 60-meter level recorded the longest persistence from the west-southwest (158 hours). Tables containing summaries of wind persistence for all wind speeds and at both the 10- and 60-meter levels indicate that winds are most likely to be persistent from the southwest direction for single sector widths and from the west-southwest for three adjoining sector widths. In addition, the final row in the tables displays the average persistent hours for each wind direction and provides a method for determining which direction winds are most likely to persist longer. For the 10-meter level, the wind is most likely to persist longer from the south-southwest and southwest directions for single and three adjoining sector widths, respectively. A persistent wind is most likely to last longer at the 60-meter level for west-southwest and southwest wind directions for single sector and three adjoining sector widths, respectively.

Table 2.7-51 through Table 2.7-62 present the persistence of wind direction and speed at the 10-meter level for the single sector and three adjoining sectors for various wind speeds at Detroit Metropolitan Airport during the 2003 through 2007 time period (Reference 2.7-41). At the 10-meter level (the only level at Detroit Metropolitan Airport), the longest persistent wind blew from the north-northwest and lasted 24 hours for a single sector. For three adjoining sectors the longest persistent wind lasted 67 hours from the southwest. Table 2.7-51 and Table 2.7-57 present wind persistence summaries for all wind speeds for the single sector and three adjoining sector widths, respectively. The most likely direction for a wind to be persistent for both single and three adjoining sector widths is south. Wind is most likely to persist longer when blowing from the north and north-northeast for single and three adjoining sector widths, respectively. Previously in Subsection 2.7.4.2 the noticeable increase of east through southeast winds at the Fermi site was discussed and attributed to the onshore lake breeze that develops during the spring and summer seasons. The wind persistence summaries indicate that for those directions the Fermi site experiences a higher percentage of persistent wind occurrences than the Detroit Metropolitan Airport. Furthermore, when winds are persistent from the east through southeast directions they continue for longer hours at the Fermi site.

### 2.7.4.4 Atmospheric Stability

Atmospheric diffusion, independent of the effects of wind speed, is proportional to the stability of the atmosphere and has a large impact on potential vertical and horizontal dispersion of radioactive contamination or any other type of pollutant in the ambient air. Atmospheric stability can generally be classified as unstable, neutral, and stable. During stable conditions, diffusion is at its lowest levels while under unstable conditions diffusion is at its highest levels. Pasquill-Gifford developed seven categories measuring atmospheric stability that are accepted and used by the NRC. The various categories can be determined by the difference in temperature ($\Delta T$) between two temperature measurement levels normalized to 100 meters. As defined in Regulatory Guide 1.23, the following categories of atmospheric stability reflect the $\Delta T$ in degrees Celsius per 100 meters.

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

Table 2.7-63 presents mean annual and monthly wind speeds for the 60-meter level at the Fermi site for each of the Pasquill-Gifford stability categories. Annually the mean wind speeds are highest when the stability at the Fermi site is neutral, while mean wind speeds are the lowest under extremely stable conditions, characteristic of high pressure systems. Table 2.7-63 also contains the annual and monthly distribution of stability categories. The Fermi site experienced neutral and slightly stable conditions approximately 56 percent of the total number of hours during the 5-year period. Unstable conditions (Classes A, B, and C combined) occurred approximately 30 percent of the total hours.

Table 2.7-64 through Table 2.7-79 present the annual Joint Frequency Distributions (JFD) of wind speed and direction by stability category at the 10- and 60-meter levels of the Fermi onsite meteorological tower for the 2003 through 2007 time period. It is noticeable from the JFD for the 10-meter level that for stable conditions (Classes E, F, and G) the observations with wind speeds less than 4 mph occur most frequently, implying that stable conditions generally are associated with light winds. Tables for the 60-meter level suggest that for stable conditions wind speeds are most frequently 8-13 mph, which can be explained by the fact that the 60-meter level wind speeds are less affected by the friction of the earth's surface. For unstable conditions (Classes A, B, and C), there is more variance in the wind speeds categories at both the 10- and 60-meter levels, inferring that unstable conditions are associated with many wind speeds. Therefore, the stability summaries for the 10- and 60-meter levels indicate the air dispersion conditions that can be expected at the Fermi site during accidental and routine radiation releases for different stability scenarios.

### 2.7.5 Topographical Description and Potential Modifications

The impacts resulting from modification of the local topography during construction of Fermi 3 on the local meteorological characteristics are expected to be minor. These impacts will be limited to the construction of a natural draft cooling tower (NDCT) and 4-cell mechanical draft cooling tower (MDCT), as well as the reactor building and other plant structures. This section will discuss the regional topography and the estimated extent of the impacts of the construction of a new facility on the meteorological parameters at the Fermi site.

Regional Topography

The Fermi site is located in the northeastern part of Monroe County and along the western shoreline of Lake Erie. Figure 2.7-56 and Figure 2.7-57 show topographic features within five and 50 miles, respectively, of the Fermi site. The terrain in the region of the Fermi site is mainly flat plains that gently slope to higher elevation west and northwest of the Fermi site. Approximately 30 miles west and northwest of the Fermi site are the Irish Hills which contain elevations as high as 1146 feet above mean sea level. The Fermi site is relatively flat and has a general elevation of approximately 583 feet. Figure 2.7-58 shows the terrain elevation profiles for each of the sixteen 22.5 degree compass directions to a distance of five miles from the site. The waters of Lake Erie are approximately 1526 feet east of the Fermi 3 reactor building. Figure 2.7-58 presents similar terrain profiles out to 50 miles from the Fermi site.

Estimated Impacts of Facility Construction

Construction activities for Fermi 3 are not expected to impact the local climate of the site significantly. Fermi 3 will be located southwest of the Fermi 2 reactor building. Fermi 3 will be located in the southwest portion of the Fermi site that is already cleared of trees and may only require minor additional grading. Any influence of the grading on the micro-scale climate will be minimal during construction and will be limited to the Fermi 3 site and the immediate surrounding area. This will lead to minimal change in the overall topography around the Fermi site, and thus will not represent a significant alteration to the flat and gently sloping topographic character of the area and region around the site. Additionally, construction of new roads to accommodate the construction traffic for the new facility and the addition of buildings, parking areas and other structures should have little to no effect on the local meteorology of the site.

### 2.7.6 Atmospheric Dispersion Factors

This section discusses the determination of atmospheric dispersion factors at various locations. The section discusses the models used, various inputs, and the results.

#### 2.7.6.1 Short-Term (Accident) Diffusion Estimates

Basis

To evaluate potential health effects of design basis accidents at Fermi 3, a hypothetical accident is postulated to predict upper-limit concentrations and doses that might occur in the event of a containment release to the atmosphere. To evaluate the effects of design basis accidents, Section 7.1 of NUREG-1555, Environmental Standard Review Plan, Standard Review Plans for

Environmental Reviews for Nuclear Power Plants, October 1999 (NUREG-1555), specifically requires the applicant to account for the 50-percentile X/Q values at appropriate distances from the release points of effluents to the atmosphere. Site-specific meteorological data covering the 6-year period of record from 2002 through 2007 was used to quantitatively evaluate such a hypothetical accident at the site. Onsite data provides representative measurements of local dispersion conditions appropriate to the Fermi site and a 6-year period of record is considered to be reasonably representative of long-term conditions. The meteorological tower is located east of a grove of trees that is located less than ten times the obstruction height recommended in Regulatory Guide 1.23. The impact of the trees, for upwind sectors, is to reduce the indicated wind speed at the 10 meter elevation. For determination of the atmospheric dispersion factors used in the analysis of off-site design basis accident (PAVAN) using the lower indicated wind speed provides conservative results.

According to 10 CFR 100, it is necessary to consider the doses for various time periods immediately following the onset of a postulated containment release at the Exclusion Area Boundary (EAB) and for the duration of exposure for the Low Population Zone (LPZ). Meteorological data has been used to determine various postulated accident conditions as specified in NRC Regulatory Guide 1.145, “Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants.” Compared to a stack release, a ground-level release usually results in higher ground-level concentrations at downwind receptors because of less dilution from shorter traveling distances. Since the ground-level release scenario provides a bounding case, stack releases are not considered.

The PAVAN computer program as described in NUREG/CR-2858 (Reference 2.7-45), is used to estimate downwind ground-level air concentrations (X/Q) at the EAB and LPZ for potential accidental releases of radioactive material to the atmosphere. The X/Q values are estimated for various time periods ranging up to 30 days. This assessment is required by 10 CFR 100.

The EAB for Fermi 3, shown in Figure 2.1-3 and Figure 2.1-4, is a circle centered at the Reactor Building with a radius of 2928 feet (892 m). The LPZ for Fermi 3 is a 3-mile (4828-m) radius circle centered at the Reactor Building. For the purposes of determining X/Q values and subsequent radiation dose analyses, an effective EAB and LPZ are determined. These are referred to as the Dose Calculation EAB and the Dose Calculation LPZ. A circle is drawn from the center of the Reactor Building that encompasses the postulated design basis accident release locations. The Dose calculation EAB and LPZ are defined as the distance between this circle and the EAB. The Dose Calculation EAB is completely within the actual plant EAB; thus, the X/Q values are higher.

The PAVAN program implements the guidance provided in Regulatory Guide 1.145. Mainly, the program 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 calculated X/Q values are also ranked independently of wind direction into a cumulative frequency distribution for the entire site. The PAVAN program then selects the X/Qs that are equaled or exceeded 5 percent of the total time.

The PAVAN program conservatively has been configured to calculate offsite X/Q values assuming no credit for building wake effects.

The PAVAN program input data and assumptions are presented below:

- Meteorological data: 6-year (2002-2007) composite onsite joint frequency distributions of wind speed, wind direction, and atmospheric stability.
- Type of release: Ground-level
- Wind sensor height: 10 meters
- Vertical temperature difference: between 10 m to 60 m
- Number of wind speed categories: 14
- Release height: 10 meters (default height)
- Distances from release point to Dose Calculation EAB for all downwind sectors: 740 meters
- Distances from release point to Dose Calculation LPZ for all downwind sectors: 4670 meters

<u>PAVAN Modeling Results</u>

Based on the upper envelope of the ordered 5-percent overall site limit X/Q values as calculated by the PAVAN model, the 50-percentile overall site (i.e., non-direction specific) X/Qs at the Dose Calculation EAB and LPZ are estimated to be 5.675E-05 sec/m$^3$ and 4.026E-06 sec/m$^3$, respectively. This model predicted X/Q values represent a 0- to 2-hour time interval. The LPZ X/Q values for intermediate time periods (i.e., 8 hours, 16 hours, 72 hours, and 624 hours) were determined by logarithmic interpolation between the 50-percential 0- to 2-hour X/Q value at the Dose Calculation LPZ and the corresponding annual average X/Qs. These results, along with the 50-percentile, 0- to 2-hour and the annual average X/Q values, are summarized below:

| Location | 0-2 hours X/Q (sec/m$^3$) | 0-8 hours X/Q (sec/m$^3$) | 8-24 hours X/Q (sec/m$^3$) | 1-4 days X/Q (sec/m$^3$) | 4-30 days X/Q (sec/m$^3$) | Annual Average X/Q (sec/m$^3$) |
|---|---|---|---|---|---|---|
| Dose Calculation EAB | 5.675E-05 | | | | | 4.09E-05 |
| Dose Calculation LPZ | 4.026E-06 | 3.057E-06 | 2.664E-06 | 1.977E-06 | 1.287E-06 | 7.62E-07 |

### 2.7.6.2 Long-Term (Routine) Diffusion Estimates

Basis

The NRC-sponsored XOQDOQ computer program, as described in NUREG/CR-2919 (Reference 2.7-47), is used to estimate X/Q values due to routine releases of gaseous effluents to the atmosphere. The XOQDOQ program has the primary function of calculating annual average X/Q values and annual average relative deposition (D/Q) values at receptors of interest (e.g., at the site boundary and at the nearest residence, vegetable garden, etc.). The X/Q and D/Q values due to intermittent releases, which occur during routine operation, may also be evaluated using the XOQDOQ program.

The XOQDOQ program implements the assumptions outlined in Regulatory Guide 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.

The XOQDOQ program input data and assumptions are presented below:

- Meteorological data: 6-year (2002-2007) and 5-year (1985-1989) composite onsite joint frequency distributions of wind speed, wind direction, and atmospheric stability. The meteorological tower is located east of a grove of trees that is located less than ten times the obstruction height recommended in Regulatory Guide 1.23. The impact of the trees, for upwind sectors, is to reduce the indicated wind speed at the 10 meter elevation. For determination of the atmospheric dispersion factors used in the analysis of offsite routine releases the XOQDOQ program was run for both the 2002-2007 and 1985-1989 met data and both sets of results are reported.
- Type of release: Ground-level (Radwaste Building stack); mixed-mode (Reactor Building/Fuel Building and Turbine Building stacks)
- Wind sensor height: 10 meters
- Vertical temperature difference: between 10 m to 60 m
- Number of wind speed categories: 14
- Release height: 10 meters (default height) for ground-level release; 52.77 m for Reactor Building/Fuel Building stack (mixed-mode); 71.30 m for Turbine Building stack (mixed-mode)
- Building area: 350 $m^2$ for ground-level release, conservatively set to zero to neglect the building wake credit for the mixed-mode releases
- Adjacent building height: N/A for ground-level release; 48.20 m for Reactor Building/Fuel Building stack (mixed-mode); 52.0 m for Turbine Building stack (mixed-mode)
- Average Vent Velocity: N/A for ground-level release; 17.78 m/s for Reactor Building/Fuel Building stack (mixed-mode); 17.78 m/s for Turbine Building stack (mixed-mode)

- Inside Vent Diameter: N/A for ground-level release; 2.40 m for Reactor Building/Fuel Building stack (mixed-mode); 1.95 m for Turbine Building stack (mixed-mode)
- Distances from release point to site boundary, nearest residence, nearest garden, nearest sheep, nearest goat, nearest meat cow, and nearest milk cow for all downwind sectors
- Dry deposition is considered for all releases
- Continuous release is assumed
- Site and regional topography are included

As discussed in Regulatory Guide 1.111, Section C.3.c, for long term averages, dose calculations considering dry deposition only are not usually changed significantly by consideration of wet deposition. The effects of wet deposition would be considered for sites that have a well-defined rainy season corresponding to the grazing season. Based on examination of the meteorological data, the precipitation at the Fermi site is spread through-out the year, thus dry deposition is appropriate.

The distances from the release point to the site boundary, nearest residence, garden, sheep, goat, meat cow, and milk cow receptors in each downwind sector are presented in Table 2.7-80 through Table 2.7-86.

XOQDOQ Modeling Results

Table 2.7-87 through Table 2.7-95 and Table 2.7-120 through Table 2.7-140 and Tables Table 2.7-108 through Table 2.7-119 summarize the maximum relative concentration and relative deposition (i.e., Χ/Q and D/Q) values predicted by the XOQDOQ program for the site boundary and the identified receptors in the Fermi 3 area due to routine releases of gaseous effluents assuming a ground-level release from the Radwaste Building stack and mixed-mode releases from the Reactor Building/Fuel Building stack and the Turbine Building stack. Distances to the receptors are shown in Tables 2.7-80 through 2.7-86 and are determined from a circle that encompasses the possible release locations. The listed Χ/Q values reflect several plume depletion scenarios that account for radioactive decay (i.e., no decay, and the default half-life decay periods of 2.26 and 8 days). In Table 2.7-87 through Table 2.7-95 and Table 2.7-108 through Table 2.7-119, Χ/Q and D/Q values are presented for those sectors identified in Table 2.7-80 through Table 2.7-86. Tables Table 2.7-120 through Table 2.7-140 provide corresponding results based on the 1985-1989 met data.

Table 2.7-96 through Table 2.7-107 summarize annual average Χ/Q values (no decay and undepleted; 2.26 day decayed and undepleted; 8 day decayed and depleted) and D/Q values for the XOQDOQ program's 22 standard radial distances between 0.25 and 50 miles and for the program's 10 distance-segment boundaries between 0.5 and 50 miles downwind along each of the 16 standard direction radials (i.e., separated by 22.5°) based on the 2002-2007 met data. Table 2.7-141 through Table 2.7-152 provide similar results based on the 1985-1989 met data.

Fermi 3 is located on the shore of Lake Erie and a portion of the effluent could be transported across Lake Erie prior to reaching populations. Trajectories over extensive water surfaces could result in larger atmospheric diffusion rates (i.e., decreased dispersion) when compared to over land trajectories due to differences in surface roughness and static stability (Reference 2.7-48). To account for this decreased dispersion, the stability classifications for the met data for the upwind sectors were adjusted to the next higher stability classification. For example, for upwind sectors, the hours in stability class A were moved to stability class B and so forth. The annual average X/Q results are based on the Joint Frequency Distributions based on these stability adjustments.

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## Table 2.7-1 National Weather Service First–Order and Cooperative Observing Stations Surrounding the Fermi Site

| Station[1] | State | County | Approximate Distance from Fermi Site (miles) [(2)] | Relative Direction to Fermi Site | Elevation (feet) |
|---|---|---|---|---|---|
| Monroe | MI | Monroe | 8 | WSW | 590 |
| Detroit (Detroit Metropolitan Airport) | MI | Wayne | 17 | NNW | 631 |
| Windsor | ON | Essex | 27 | NNE | 622 |
| Ann Arbor (University of Michigan) | MI | Washtenaw | 33 | NW | 900 |
| Toledo | OH | Lucas | 38 | SW | 674 |
| Adrian 2 NNE | MI | Lenawee | 39 | W | 760 |
| Flint | MI | Genesee | 74 | NNW | 770 |

Notes:
1. Numeric and letter designators following a station name (Adrian 2 NNE) indicate the station's distance in miles and direction relative to the place name.
2. The Corpscon 6.0.1 conversion program was used to convert Lat/Long (NAD 83) to UTM (NAD 83) for each site location. Distances above are from the current Fermi Site facility to the listed location.

Sources: Reference 2.7-1 through Reference 2.7-7

## Table 2.7-2 Local Climatological Data Summary for Detroit, Michigan (Sheet 1 of 4)

### NORMAL, MEANS, and EXTREMES
### DETROIT (KDTW)

| LATITUDE: | LONGITUDE: | ELEVATION (FT): | TIME ZONE: | |
|---|---|---|---|---|
| 42° 12'N | -83° 20'W | GRND: 631 BARO: 631 | EASTERN (UTC-5) | WBAN: 94847 |

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEMPERATURE °F | NORMAL DAILY MAXIMUM | 30 | 31.1 | 34.4 | 45.2 | 57.8 | 70.2 | 79.0 | 83.4 | 81.4 | 73.7 | 61.2 | 47.8 | 35.9 | 58.4 |
| | MEAN DAILY MAXIMUM | 48 | 31.0 | 34.3 | 44.5 | 58.2 | 69.7 | 78.9 | 83.3 | 81.3 | 74.1 | 61.6 | 48.2 | 35.7 | 58.4 |
| | HIGHEST DAILY MAXIMUM | 48 | 62 | 70 | 81 | 89 | 93 | 104 | 102 | 100 | 98 | 91 | 77 | 69 | 104 |
| | YEAR OF OCCURRENCE | | 1995 | 1999 | 1998 | 1977 | 1988 | 1988 | 1988 | 1988 | 1976 | 1963 | 1968 | 1998 | JUN 1988 |
| | MEAN OF EXTREME MAXS. | 48 | 50.1 | 52.9 | 68.9 | 79.5 | 85.9 | 91.8 | 93.7 | 91.7 | 88.6 | 79.8 | 67.5 | 54.9 | 75.4 |
| | NORMAL DAILY MINIMUM | 30 | 17.8 | 20.0 | 28.5 | 38.4 | 49.4 | 58.9 | 63.6 | 62.2 | 54.1 | 42.5 | 33.5 | 23.4 | 41.0 |
| | MEAN DAILY MINIMUM | 48 | 16.9 | 19.0 | 27.1 | 37.7 | 47.9 | 57.3 | 62.1 | 60.8 | 53.3 | 41.8 | 32.8 | 22.6 | 39.9 |
| | LOWEST DAILY MINIMUM | 48 | -21 | -15 | -4 | 10 | 25 | 36 | 41 | 38 | 29 | 17 | 9 | -10 | -21 |
| | YEAR OF OCCURRENCE | | 1984 | 1985 | 2003 | 1982 | 1966 | 1972 | 1965 | 1982 | 1974 | 1974 | 1969 | 1983 | JAN 1984 |
| | MEAN OF EXTREME MINS. | 48 | -2.5 | 0.6 | 9.8 | 23.5 | 34.3 | 44.2 | 50.5 | 49.2 | 37.9 | 27.3 | 18.1 | 3.2 | 24.7 |
| | NORMAL DRY BULB | 30 | 24.5 | 27.2 | 36.9 | 48.1 | 59.8 | 69.0 | 73.5 | 71.8 | 63.9 | 51.9 | 40.7 | 29.6 | 49.7 |
| | MEAN DRY BULB | 48 | 24.0 | 26.7 | 35.9 | 47.9 | 58.8 | 68.3 | 72.7 | 71.1 | 63.7 | 51.7 | 40.5 | 29.3 | 49.2 |
| | MEAN WET BULB | 23 | 23.7 | 25.7 | 32.3 | 42.6 | 52.7 | 61.7 | 65.9 | 65.0 | 58.1 | 47.0 | 37.5 | 28.0 | 45.0 |
| | MEAN DEW POINT | 23 | 19.2 | 20.8 | 26.4 | 36.0 | 47.0 | 57.0 | 61.8 | 61.5 | 54.1 | 42.5 | 32.9 | 23.9 | 40.3 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | MAXIMUM >= 90 | 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 2.8 | 5.0 | 2.9 | 0.8 | 0.0 | 0.0 | 0.0 | 12.0 |
| | MAXIMUM <= 32 | 30 | 16.7 | 12.9 | 4.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 10.3 | 45.6 |
| | MINIMUM <= 32 | 30 | 28.5 | 24.7 | 21.7 | 8.7 | 0.5 | 0.0 | 0.0 | 0.0 | 0.1 | 4.0 | 15.8 | 25.8 | 129.8 |
| | MINIMUM <= 0 | 30 | 3.1 | 2.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 6.4 |
| H/C | NORMAL HEATING DEG. DAYS | 30 | 1270 | 1074 | 886 | 527 | 219 | 41 | 5 | 12 | 121 | 426 | 742 | 1099 | 6422 |
| | NORMAL COOLING DEG. DAYS | 30 | 0 | 0 | 0 | 6 | 42 | 145 | 254 | 208 | 75 | 6 | 0 | 0 | 736 |

## Table 2.7-2 Local Climatological Data Summary for Detroit, Michigan (Sheet 2 of 4)

**NORMAL, MEANS, and EXTREMES**
**DETROIT (KDTW)**

| LATITUDE: 42° 12’N | LONGITUDE: -83° 20’W | ELEVATION (FT): GRND: 631 BARO: 631 | TIME ZONE: EASTERN (UTC-5) | WBAN: 94847 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RH | NORMAL (PERCENT) | 30 | 76 | 73 | 69 | 65 | 65 | 67 | 69 | 72 | 73 | 72 | 74 | 77 | 71 |
| | HOUR 01 LST | 30 | 79 | 78 | 75 | 73 | 75 | 79 | 81 | 84 | 84 | 80 | 79 | 80 | 79 |
| | HOUR 07 LST | 30 | 81 | 80 | 79 | 77 | 77 | 79 | 83 | 86 | 87 | 84 | 82 | 81 | 81 |
| | HOUR 13 LST | 30 | 70 | 65 | 60 | 53 | 53 | 55 | 55 | 57 | 57 | 58 | 65 | 70 | 60 |
| | HOUR 19 LST | 30 | 74 | 71 | 65 | 57 | 56 | 58 | 59 | 63 | 66 | 67 | 72 | 76 | 65 |
| S | PERCENT POSSIBLE SUNSHINE | 31 | 40 | 46 | 52 | 53 | 60 | 65 | 68 | 67 | 61 | 51 | 35 | 31 | 52 |
| W/O | MEAN NO. DAYS WITH: | | | | | | | | | | | | | | |
| | HEAVY FOG (VISBY <= 1/4 MI) | 43 | 2.3 | 2.3 | 2.0 | 0.9 | 0.8 | 0.5 | 0.5 | 1.0 | 1.5 | 1.6 | 1.4 | 2.9 | 17.7 |
| | THUNDERSTORMS | 48 | 0.2 | 0.4 | 1.5 | 3.0 | 4.0 | 6.1 | 6.3 | 5.4 | 3.9 | 1.2 | 0.7 | 0.3 | 33.0 |
| CLOUDNESS | MEAN: | | | | | | | | | | | | | | |
| | SUNRISE-SUNSET (OKTAS) | | | | | | | | | | | | | | |
| | MIDNIGHT-MIDNIGHT (OKTAS) | | | | | | | | | | | | | | |
| | MEAN NO. DAYS WITH: | | | | | | | | | | | | | | |
| | CLEAR | | | | | | | | | | | | | | |
| | PARTY CLOUDY | | | | | | | | | | | | | | |
| | CLOUDY | | | | | | | | | | | | | | |
| PR | MEAN STATION PRESSURE (IN) | 23 | | 29.38 | 29.32 | 29.26 | 29.26 | 29.26 | 29.28 | 29.33 | 29.34 | 29.35 | 29.33 | 29.35 | 29.32 |
| | MEAN SEA-LEVEL PRES. (IN) | 23 | | 30.11 | 30.04 | 29.98 | 29.97 | 29.97 | 29.98 | 30.03 | 30.05 | 30.06 | 30.06 | 30.08 | 30.03 |

## Table 2.7-2 Local Climatological Data Summary for Detroit, Michigan (Sheet 3 of 4)

**NORMAL, MEANS, and EXTREMES**
**DETROIT (KDTW)**

| LATITUDE: 42° 12'N | LONGITUDE: -83° 20'W | ELEVATION (FT): GRND: 631 BARO: 631 | TIME ZONE: EASTERN (UTC-5) | WBAN: 94847 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WINDS | MEAN SPEED (MPH) | 23 | 11.6 | 10.9 | 11.0 | 10.8 | 9.8 | 8.9 | 8.4 | 7.8 | 8.3 | 9.6 | 11.0 | 11.0 | 9.9 |
| | PREVAIL DIR (TENS OF DEGS) | 39 | 24 | 24 | 30 | 30 | 30 | 24 | 23 | 23 | 24 | 24 | 24 | 24 | 24 |
| | MAXIMUM 2-MINUTE: | | | | | | | | | | | | | | |
| | SPEED (MPH) | 11 | 44 | 51 | 46 | 47 | 61 | 45 | 53 | 44 | 35 | 47 | 47 | 49 | 61 |
| | DIR. (TENS OF DEGS) | | 22 | 22 | 23 | 22 | 22 | 30 | 28 | 24 | 27 | 22 | 27 | 29 | 22 |
| | YEAR OF OCCURRENCE | | 1996 | 1997 | 2004 | 2001 | 2004 | 2005 | 1998 | 2003 | 2001 | 2004 | 2003 | 1998 | MAY 2004 |
| | MAXIMUM 5-SECOND | | | | | | | | | | | | | | |
| | SPEED (MPH) | 11 | 53 | 60 | 59 | 57 | 78 | 55 | 67 | 53 | 45 | 56 | 58 | 60 | 78 |
| | DIR. (TENS OF DEGS) | | 24 | 24 | 24 | 24 | 22 | 31 | 28 | 23 | 28 | 24 | 25 | 31 | 22 |
| | YEAR OF OCCURRENCE | | 1996 | 2001 | 2004 | 1997 | 2004 | 2005 | 1998 | 2003 | 1997 | 2004 | 1998 | 1998 | MAY 2004 |
| PRECIPITATION | NORMAL (IN) | 30 | 1.91 | 1.88 | 2.52 | 3.05 | 3.05 | 3.55 | 3.16 | 3.10 | 3.27 | 2.23 | 2.66 | 2.51 | 32.89 |
| | MAXIMUM MONTHLY (IN) | 48 | 3.92 | 5.02 | 4.48 | 5.40 | 8.46 | 7.04 | 6.02 | 7.83 | 7.52 | 6.76 | 5.68 | 6.00 | 8.46 |
| | YEAR OF OCCURRENCE | | 1993 | 1990 | 1973 | 1961 | 2004 | 1987 | 1969 | 1975 | 1986 | 2001 | 1982 | 1965 | MAY 2004 |
| | MINIMUM MONTHLY (IN) | 48 | 0.27 | 0.15 | 0.74 | 0.69 | 0.87 | 0.97 | 0.59 | 0.43 | 0.43 | 0.13 | 0.79 | 0.46 | 0.13 |
| | YEAR OF OCCURRENCE | | 1961 | 1969 | 2005 | 2004 | 1988 | 1988 | 1974 | 1996 | 1960 | 2005 | 1976 | 1960 | OCT 2005 |
| | MAXIMUM IN 24 HOURS (IN) | 48 | 1.72 | 2.41 | 1.82 | 3.58 | 2.87 | 2.84 | 4.34 | 3.21 | 4.08 | 2.57 | 2.30 | 3.71 | 4.34 |
| | YEAR OF OCCURRENCE | | 1967 | 1998 | 1997 | 2000 | 1968 | 1983 | 1998 | 1964 | 2000 | 1985 | 2005 | 1965 | JUL 1998 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | PRECIPITATION >= 0.01 | 30 | 13.4 | 11.3 | 12.7 | 12.6 | 11.6 | 10.1 | 9.6 | 9.5 | 9.9 | 9.8 | 12.3 | 13.9 | 136.7 |
| | PRECIPITATION >= 1.00 | 30 | 0.1 | 0.2 | 0.2 | 0.4 | 0.6 | 0.9 | 0.8 | 0.7 | 0.6 | 0.3 | 0.3 | 0.2 | 5.3 |

## Table 2.7-2 Local Climatological Data Summary for Detroit, Michigan (Sheet 4 of 4)

**NORMAL, MEANS, and EXTREMES**
**DETROIT (KDTW)**

| LATITUDE: 42° 12’N | LONGITUDE: -83° 20’W | ELEVATION (FT): GRND: 631 BARO: 631 | TIME ZONE: EASTERN (UTC-5) | WBAN: 94847 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNOWFALL | NORMAL (IN) | 30 | 11.9 | 9.3 | 7.0 | 1.7 | 0.* | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 2.7 | 11.1 | 44.0 |
| | MAXIMUM MONTHLY (IN) | 47 | 29.6 | 20.8 | 16.1 | 9.0 | 0.1 | T | 0.0 | 0.0 | T | 2.9 | 11.8 | 34.9 | 34.9 |
| | YEAR OF OCCURRENCE | | 1978 | 1986 | 1965 | 1982 | 2005 | 2006 | | | 1994 | 1980 | 1966 | 1974 | DEC 1974 |
| | MAXIMUM IN 24 HOURS (IN) | 47 | 12.2 | 10.3 | 9.2 | 7.4 | 0.1 | T | 0.0 | 0.0 | T | 2.9 | 5.6 | 19.2 | 19.2 |
| | YEAR OF OCCURRENCE | | 2005 | 1965 | 1973 | 1982 | 2005 | 2006 | | | 1994 | 1980 | 1977 | 1974 | DEC 1974 |
| | MAXIMUM SNOW DEPTH (IN) | 46 | 24 | 18 | 9 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 19 | 24 |
| | YEAR OF OCCURRENCE | | 1999 | 1982 | 1982 | 1982 | | | | | | 1980 | 1966 | 1974 | JAN 1999 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | SNOWFALL >= 1.0 | 30 | 3.6 | 2.9 | 2.1 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.9 | 3.5 | 13.6 |

Source: Reference 2.7-1

## Table 2.7-3 Local Climatological Data Summary for Flint, Michigan (Sheet 1 of 4)

**NORMAL, MEANS, and EXTREMES**
**FLINT (KFNT)**

| LATITUDE: | LONGITUDE: | ELEVATION (FT): | TIME ZONE: | |
|---|---|---|---|---|
| 42° 58'N | -83° 44'W | GRND: 770 BARO: 783 | EASTERN (UTC-5) | WBAN: 14826 |

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEMPERATURE °F | NORMAL DAILY MAXIMUM | 30 | 29.2 | 32.3 | 43.1 | 56.2 | 69.0 | 77.7 | 82.0 | 79.5 | 71.9 | 59.7 | 46.3 | 34.2 | 56.8 |
| | MEAN DAILY MAXIMUM | 114 | 29.1 | 29.7 | 41.9 | 55.5 | 68.4 | 76.9 | 81.5 | 80.4 | 71.0 | 60.7 | 45.2 | 32.3 | 56.1 |
| | HIGHEST DAILY MAXIMUM | 50 | 61 | 68 | 80 | 87 | 93 | 101 | 101 | 98 | 94 | 89 | 76 | 70 | 101 |
| | YEAR OF OCCURRENCE | | 1997 | 1999 | 2000 | 2004 | 1988 | 1988 | 1995 | 2001 | 2002 | 2002 | 1978 | 2001 | JUL 1995 |
| | MEAN OF EXTREME MAXS. | 114 | 48.4 | 50.6 | 66.1 | 77.9 | 84.1 | 90.4 | 92.1 | 90.9 | 86.7 | 78.7 | 66.3 | 53.9 | 73.8 |
| | NORMAL DAILY MINIMUM | 30 | 13.3 | 15.3 | 24.3 | 34.6 | 45.2 | 54.6 | 59.1 | 57.4 | 49.4 | 38.6 | 29.8 | 19.1 | 36.7 |
| | MEAN DAILY MINIMUM | 114 | 15.2 | 14.0 | 24.2 | 34.6 | 45.3 | 54.0 | 57.6 | 57.0 | 49.6 | 40.1 | 29.8 | 19.8 | 36.8 |
| | LOWEST DAILY MINIMUM | 50 | -25 | -22 | -12 | 6 | 22 | 33 | 40 | 37 | 26 | 19 | 6 | -13 | -25 |
| | YEAR OF OCCURRENCE | | 1976 | 1967 | 1978 | 1982 | 1966 | 1998 | 2001 | 1982 | 1991 | 1974 | 1976 | 2000 | JAN 1976 |
| | MEAN OF EXTREME MINS. | 114 | -6.0 | -4.0 | 4.9 | 21.1 | 31.1 | 40.3 | 46.4 | 44.4 | 34.2 | 25.1 | 15.2 | 0.1 | 21.1 |
| | NORMAL DRY BULB | 30 | 21.3 | 23.8 | 33.7 | 45.4 | 57.1 | 66.2 | 70.6 | 68.5 | 60.7 | 49.2 | 38.1 | 26.7 | 46.8 |
| | MEAN DRY BULB | 114 | 22.2 | 21.9 | 33.0 | 45.1 | 56.9 | 65.5 | 69.5 | 68.7 | 60.3 | 50.4 | 37.6 | 26.1 | 46.4 |
| | MEAN WET BULB | 23 | 22.1 | 23.9 | 30.7 | 41.3 | 51.5 | 60.6 | 64.6 | 63.7 | 56.6 | 45.8 | 36.1 | 26.8 | 43.6 |
| | MEAN DEW POINT | 23 | 18.4 | 19.6 | 25.5 | 35.1 | 46.0 | 56.3 | 60.8 | 60.6 | 53.1 | 41.8 | 32.2 | 23.4 | 39.4 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | MAXIMUM >= 90 | 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.7. | 3.2 | 1.5 | 0.6 | 0.0 | 0.0 | 0.0 | 7.3 |
| | MAXIMUM <= 32 | 30 | 18.5 | 14.4 | 5.3 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 12.0 | 52.8 |
| | MINIMUM <= 32 | 30 | 29.0 | 25.3 | 23.0 | 11.1 | 1.6 | 0.0 | 0.0 | 0.0 | 0.4 | 5.8 | 17.1 | 27.2 | 140.5 |
| | MINIMUM <= 0 | 30 | 4.6 | 3.6 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 10.5 |
| H/C | NORMAL HEATING DEG. DAYS | 30 | 1341 | 1147 | 957 | 577 | 267 | 66 | 13 | 28 | 168 | 478 | 791 | 1172 | 7005 |
| | NORMAL COOLING DEG. DAYS | 30 | 0 | 0 | 1 | 5 | 33 | 110 | 199 | 151 | 52 | 4 | 0 | 0 | 555 |

## Table 2.7-3 Local Climatological Data Summary for Flint, Michigan (Sheet 2 of 4)

**NORMAL, MEANS, and EXTREMES**
**FLINT (KFNT)**

| LATITUDE: 42° 58'N | LONGITUDE: -83° 44'W | ELEVATION (FT): GRND: 770 BARO: 783 | TIME ZONE: EASTERN (UTC-5) | WBAN: 14826 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RH | NORMAL (PERCENT) | 30 | 77 | 75 | 71 | 66 | 66 | 69 | 71 | 75 | 76 | 74 | 76 | 79 | 73 |
| | HOUR 01 LST | 30 | 81 | 79 | 77 | 75 | 76 | 80 | 84 | 87 | 87 | 82 | 81 | 82 | 81 |
| | HOUR 07 LST | 30 | 82 | 81 | 81 | 79 | 78 | 81 | 85 | 90 | 90 | 85 | 83 | 83 | 83 |
| | HOUR 13 LST | 30 | 72 | 69 | 62 | 55 | 54 | 56 | 55 | 59 | 59 | 60 | 68 | 74 | 62 |
| | HOUR 19 LST | 30 | 76 | 72 | 66 | 59 | 56 | 58 | 59 | 65 | 69 | 71 | 75 | 79 | 67 |
| S | PERCENT POSSIBLE SUNSHINE | | | | | | | | | | | | | | |
| W/O | MEAN NO. DAYS WITH: | | | | | | | | | | | | | | |
| | HEAVY FOG (VISBY <= 1/4 MI) | 43 | 1.6 | 1.6 | 2.3 | 0.8 | 1.2 | 0.8 | 1.1 | 1.6 | 2.0 | 1.8 | 1.1 | 2.2 | 18.1 |
| | THUNDERSTORMS | 58 | 0.2 | 0.2 | 1.2 | 2.9 | 4.2 | 5.8 | 6.4 | 5.7 | 3.6 | 1.5 | 0.8 | 0.3 | 32.8 |
| CLOUDNESS | MEAN: | | | | | | | | | | | | | | |
| | SUNRISE-SUNSET (OKTAS) | | | | | | | 6.4 | | | | | | | |
| | MIDNIGHT-MIDNIGHT (OKTAS) | | | | | | | 7.2 | | | | | | | |
| | MEAN NO. DAYS WITH: | | | | | | | | | | | | | | |
| | CLEAR | | | 2.0 | 3.0 | | 3.0 | 6.0 | | | | | | | |
| | PARTY CLOUDY | 1 | 2.0 | 3.0 | 5.0 | | 9.0 | 2.0 | | | | | | | |
| | CLOUDY | 1 | 4.0 | 6.0 | 9.0 | | 6.0 | 13.0 | | | | | | | |
| PR | MEAN STATION PRESSURE (IN) | 23 | 29.21 | 29.23 | 29.21 | 29.15 | 29.15 | 29.15 | 29.18 | 29.22 | 29.23 | 29.23 | 29.21 | 29.22 | 29.20 |
| | MEAN SEA-LEVEL PRES. (IN) | 23 | 30.06 | 30.08 | 30.05 | 29.98 | 29.97 | 29.97 | 29.99 | 30.03 | 30.05 | 30.06 | 30.05 | 30.07 | 30.03 |

## Table 2.7-3 Local Climatological Data Summary for Flint, Michigan (Sheet 3 of 4)

**NORMAL, MEANS, and EXTREMES**
**FLINT (KFNT)**

| LATITUDE: | LONGITUDE: | ELEVATION (FT): | TIME ZONE: | |
|---|---|---|---|---|
| 42° 58'N | -83° 44'W | GRND: 770 BARO: 783 | EASTERN (UTC-5) | WBAN: 14826 |

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WINDS | MEAN SPEED (MPH) | 23 | 10.8 | 10.4 | 10.6 | 10.4 | 9.5 | 8.2 | 7.6 | 7.2 | 7.9 | 9.1 | 10.2 | 10.1 | 9.3 |
| | PREVAIL DIR (TENS OF DEGS) | 35 | 24 | 28 | 28 | 08 | 19 | 21 | 24 | 21 | 20 | 21 | 24 | 24 | 24 |
| | MAXIMUM 2-MINUTE: | | | | | | | | | | | | | | |
| | SPEED (MPH) | 11 | 37 | 41 | 40 | 41 | 40 | 36 | 40 | 35 | 38 | 41 | 41 | 38 | 41 |
| | DIR. (TENS OF DEGS) | | 25 | 30 | 25 | 30 | 26 | 28 | 33 | 24 | 30 | 31 | 28 | 27 | 31 |
| | YEAR OF OCCURRENCE | | 1996 | 2006 | 2002 | 2002 | 2004 | 2000 | 1998 | 2003 | 2005 | 2006 | 2003 | 2003 | OCT 2006 |
| | MAXIMUM 5-SECOND | | | | | | | | | | | | | | |
| | SPEED (MPH) | 11 | 52 | 53 | 51 | 52 | 49 | 46 | 51 | 46 | 48 | 53 | 55 | 49 | 55 |
| | DIR. (TENS OF DEGS) | | 18 | 32 | 27 | 26 | 27 | 29 | 25 | 27 | 29 | 31 | 22 | 27 | 22 |
| | YEAR OF OCCURRENCE | | 1996 | 2006 | 2002 | 2003 | 2000 | 2000 | 2003 | 1996 | 2005 | 2006 | 1998 | 2003 | NOV 1998 |
| PRECIPITATION | NORMAL (IN) | 30 | 1.57 | 1.35 | 2.22 | 3.13 | 2.74 | 3.07 | 3.17 | 3.43 | 3.76 | 234 | 2.65 | 2.18 | 31.61 |
| | MAXIMUM MONTHLY (IN) | 65 | 4.02 | 5.28 | 4.33 | 5.90 | 8.19 | 6.52 | 9.35 | 11.04 | 10.86 | 6.59 | 5.66 | 4.66 | 11.04 |
| | YEAR OF OCCURRENCE | | 2006 | 1954 | 1948 | 1947 | 2004 | 1994 | 1992 | 1975 | 1986 | 2001 | 2003 | 1971 | AUG 1975 |
| | MINIMUM MONTHLY (IN) | 65 | 0.07 | 0.17 | 0.25 | 0.62 | 0.34 | 0.63 | 0.73 | 0.45 | 0.29 | 0.33 | 0.66 | 0.44 | 0.07 |
| | YEAR OF OCCURRENCE | | 1945 | 1969 | 1958 | 1942 | 1988 | 1988 | 1978 | 1969 | 2002 | 1944 | 1980 | 1969 | JAN 1945 |
| | MAXIMUM IN 24 HOURS (IN) | 65 | 1.81 | 2.85 | 2.33 | 2.89 | 2.25 | 3.55 | 3.72 | 4.45 | 6.04 | 3.19 | 2.30 | 1.77 | 6.04 |
| | YEAR OF OCCURRENCE | | 1967 | 1954 | 1948 | 1976 | 1974 | 1943 | 1957 | 1968 | 1950 | 1981 | 1995 | 1971 | SEP 1950 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | PRECIPITATION >= 0.01 | 30 | 13.8 | 10.9 | 12.2 | 12.9 | 10.7 | 10.5 | 9.7 | 10.1 | 10.5 | 10.1 | 12.6 | 13.8 | 137.8 |
| | PRECIPITATION >= 1.00 | 30 | 0.1 | 0.1 | 0.3 | 0.5 | 0.4 | 0.6 | 0.8 | 0.5 | 1.0 | 0.3 | 0.4 | 0.2 | 5.2 |

## Table 2.7-3 Local Climatological Data Summary for Flint, Michigan (Sheet 4 of 4)

**NORMAL, MEANS, and EXTREMES**
**FLINT (KFNT)**

| LATITUDE: 42° 58'N | LONGITUDE: -83° 44'W | ELEVATION (FT): GRND: 770 BARO: 783 | TIME ZONE: EASTERN (UTC-5) | WBAN: 14826 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNOWFALL | NORMAL (IN) | 30 | 13.2 | 9.4 | 7.7 | 2.6 | 0.* | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 3.5 | 11.6 | 48.3 |
| | MAXIMUM MONTHLY (IN) | 65 | 28.5 | 20.8 | 19.4 | 17.3 | 0.6 | T | T | T | T | 4.4 | 16.2 | 35.3 | 35.3 |
| | YEAR OF OCCURRENCE | | 1976 | 1990 | 1965 | 1975 | 1961 | 2006 | 1992 | 1998 | 1975 | 1989 | 1951 | 2000 | DEC 2000 |
| | MAXIMUM IN 24 HOURS (IN) | 65 | 19.8 | 11.3 | 12.6 | 16.7 | 0.5 | T | T | T | T | 3.5 | 13.4 | 10.8 | 19.8 |
| | YEAR OF OCCURRENCE | | 1967 | 1965 | 1973 | 1975 | 1961 | 1992 | 1992 | 1998 | 1975 | 1989 | 1951 | 2000 | JAN 1967 |
| | MAXIMUM SNOW DEPTH (IN) | 57 | 23 | 23 | 13 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 20 | 23 |
| | YEAR OF OCCURRENCE | | 1967 | 1967 | 1973 | 1975 | | | | | | 1997 | 1975 | 2000 | FEB 1967 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | SNOWFALL >= 1.0 | 30 | 4.0 | 3.1 | 2.5 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.2 | 3.9 | 15.3 |

Source: Reference 2.7-2

# Table 2.7-4 Local Climatological Data Summary for Toledo, Ohio (Sheet 1 of 4)

## NORMAL, MEANS, and EXTREMES
## TOLEDO (KTOL)

| LATITUDE: 41° 35’N | LONGITUDE: -83° 48’W | ELEVATION (FT): GRND: 674 BARO: 693 | TIME ZONE: EASTERN (UTC-5) | WBAN: 94830 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TEMPERATURE °F | NORMAL DAILY MAXIMUM | 30 | 31.4 | 35.1 | 46.5 | 58.9 | 70.7 | 79.5 | 83.4 | 81.0 | 74.0 | 62.1 | 48.3 | 36.0 | 58.9 |
| | MEAN DAILY MAXIMUM | 52 | 31.1 | 34.8 | 45.4 | 59.4 | 70.6 | 79.8 | 83.9 | 81.9 | 74.9 | 62.8 | 48.7 | 36.0 | 59.1 |
| | HIGHEST DAILY MAXIMUM | 51 | 65 | 71 | 81 | 88 | 95 | 104 | 104 | 99 | 98 | 91 | 80 | 70 | 104 |
| | YEAR OF OCCURRENCE | | 1995 | 2000 | 1998 | 2002 | 1962 | 1988 | 1995 | 1993 | 1978 | 1963 | 2003 | 2001 | JUL 1995 |
| | MEAN OF EXTREME MAXS. | 52 | 51.4 | 55.9 | 70.4 | 80.9 | 87.2 | 92.8 | 94.3 | 91.8 | 89.4 | 80.7 | 68.6 | 56.9 | 76.7 |
| | NORMAL DAILY MINIMUM | 30 | 16.4 | 18.9 | 27.9 | 37.7 | 48.6 | 58.2 | 62.6 | 60.7 | 52.9 | 41.6 | 32.6 | 23.3 | 40.0 |
| | MEAN DAILY MINIMUM | 52 | 16.4 | 18.9 | 27.0 | 37.5 | 47.4 | 56.7 | 61.3 | 59.6 | 51.9 | 40.8 | 32.0 | 21.8 | 39.3 |
| | LOWEST DAILY MINIMUM | 51 | -20 | -14 | -6 | 8 | 25 | 32 | 40 | 34 | 26 | 15 | 2 | -19 | -20 |
| | YEAR OF OCCURRENCE | | 1984 | 1982 | 1984 | 1982 | 2005 | 1972 | 1988 | 1982 | 1974 | 1976 | 1958 | 1989 | JAN 1984 |
| | MEAN OF EXTREME MINS. | 52 | -4.4 | -0.7 | 9.0 | 21.6 | 32.4 | 42.7 | 48.9 | 46.8 | 35.5 | 25.1 | 16.1 | 1.1 | 22.8 |
| | NORMAL DRY BULB | 30 | 23.9 | 27.0 | 37.2 | 48.3 | 59.6 | 68.8 | 73.0 | 70.8 | 63.5 | 51.8 | 40.5 | 29.2 | 49.5 |
| | MEAN DRY BULB | 52 | 23.8 | 26.9 | 36.3 | 48.4 | 59.0 | 68.4 | 72.6 | 70.7 | 63.4 | 51.8 | 40.3 | 28.9 | 49.2 |
| | MEAN WET BULB | 23 | 24.2 | 26.4 | 33.2 | 43.4 | 53.4 | 62.2 | 66.5 | 65.3 | 58.1 | 47.3 | 37.9 | 28.1 | 45.5 |
| | MEAN DEW POINT | 23 | 20.1 | 22.1 | 27.6 | 37.0 | 48.0 | 57.8 | 62.6 | 62.2 | 54.4 | 42.9 | 33.6 | 24.6 | 41.1 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | MAXIMUM >= 90 | 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 3.4 | 5.9 | 3.2 | 1.2 | 0.0 | 0.0 | 0.0 | 14.6 |
| | MAXIMUM <= 32 | 30 | 16.7 | 12.6 | 4.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 10.6 | 45.8 |
| | MINIMUM <= 32 | 30 | 28.5 | 24.6 | 21.5 | 9.6 | 1.0 | * | 0.0 | 0.0 | 0.4 | 6.1 | 16.8 | 26.0 | 134.5 |
| | MINIMUM <= 0 | 30 | 4.3 | 3.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 8.9 |
| H/C | NORMAL HEATING DEG. DAYS | 30 | 1281 | 1079 | 878 | 517 | 224 | 45 | 6 | 18 | 129 | 431 | 745 | 1107 | 6460 |
| | NORMAL COOLING DEG. DAYS | 30 | 0 | 0 | 1 | 7 | 42 | 148 | 248 | 190 | 73 | 6 | 0 | 0 | 715 |

## Table 2.7-4 Local Climatological Data Summary for Toledo, Ohio (Sheet 2 of 4)

**NORMAL, MEANS, and EXTREMES**
**TOLEDO (KTOL)**

| LATITUDE: | LONGITUDE: | ELEVATION (FT): | TIME ZONE: | |
|---|---|---|---|---|
| 41° 35'N | -83° 48'W | GRND: 674 BARO: 693 | EASTERN (UTC-5) | WBAN: 94830 |

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RH | NORMAL (PERCENT) | 30 | 77 | 75 | 70 | 66 | 67 | 69 | 71 | 76 | 76 | 74 | 76 | 79 | 73 |
| RH | HOUR 01 LST | 30 | 80 | 79 | 77 | 75 | 79 | 83 | 85 | 89 | 88 | 83 | 80 | 82 | 82 |
| RH | HOUR 07 LST | 30 | 81 | 81 | 81 | 79 | 80 | 82 | 86 | 91 | 92 | 87 | 83 | 83 | 84 |
| RH | HOUR 13 LST | 30 | 71 | 67 | 60 | 53 | 53 | 55 | 56 | 59 | 58 | 58 | 66 | 73 | 61 |
| RH | HOUR 19 LST | 30 | 76 | 72 | 65 | 58 | 57 | 59 | 61 | 68 | 71 | 71 | 74 | 78 | 68 |
| S | PERCENT POSSIBLE SUNSHINE | 40 | 41 | 46 | 50 | 52 | 60 | 64 | 65 | 63 | 61 | 54 | 37 | 33 | 52 |
| W/O | MEAN NO. DAYS WITH: | | | | | | | | | | | | | | |
| W/O | HEAVY FOG (VISBY <= 1/4 MI) | 43 | 1.8 | 1.6 | 1.8 | 0.7 | 0.7 | 1.0 | 0.8 | 1.6 | 1.7 | 1.8 | 1.4 | 2.3 | 17.2 |
| W/O | THUNDERSTORMS | 52 | 0.2 | 0.5 | 1.6 | 3.3 | 4.5 | 6.1 | 6.2 | 5.2 | 3.0 | 1.1 | 0.8 | 0.2 | 32.7 |
| CLOUDNESS | MEAN: | | | | | | | | | | | | | | |
| CLOUDNESS | SUNRISE-SUNSET (OKTAS) | | | | | | | | | | | | | | |
| CLOUDNESS | MIDNIGHT-MIDNIGHT (OKTAS) | | | | | | | | | | | | | | |
| CLOUDNESS | MEAN NO. DAYS WITH: | | | | | | | | | | | | | | |
| CLOUDNESS | CLEAR | | | | 2.0 | | 2.0 | | | | | | | | |
| CLOUDNESS | PARTY CLOUDY | | | | 1.0 | | | | | | | | | | |
| CLOUDNESS | CLOUDY | 1 | 1.0 | 1.0 | 2.0 | | | | | | | | | | |
| PR | MEAN STATION PRESSURE (IN) | 23 | 29.32 | 29.32 | 29.29 | 29.23 | 29.24 | 29.24 | 29.26 | 29.30 | 29.32 | 29.32 | 29.32 | 29.33 | 29.29 |
| PR | MEAN SEA-LEVEL PRES. (IN) | 23 | 30.09 | 30.10 | 30.05 | 29.98 | 29.98 | 29.97 | 29.99 | 30.03 | 30.05 | 30.07 | 30.07 | 30.10 | 30.04 |

## Table 2.7-4 Local Climatological Data Summary for Toledo, Ohio (Sheet 3 of 4)

**NORMAL, MEANS, and EXTREMES**
**TOLEDO (KTOL)**

| LATITUDE: 41° 35'N | LONGITUDE: -83° 48'W | ELEVATION (FT): GRND: 674 BARO: 693 | TIME ZONE: EASTERN (UTC-5) | WBAN: 94830 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WINDS | MEAN SPEED (MPH) | 23 | 10.8 | 10.3 | 10.6 | 10.6 | 9.2 | 7.9 | 7.2 | 6.6 | 7.2 | 8.5 | 10.1 | 10.0 | 9.1 |
| | PREVAIL DIR (TENS OF DEGS) | 32 | 25 | 25 | 07 | 07 | 24 | 24 | 24 | 25 | 25 | 24 | 25 | 25 | 25 |
| | MAXIMUM 2-MINUTE: | | | | | | | | | | | | | | |
| | SPEED (MPH) | 11 | 43 | 46 | 46 | 48 | 46 | 44 | 40 | 43 | 38 | 45 | 51 | 48 | 51 |
| | DIR. (TENS OF DEGS) | | 24 | 26 | 24 | 25 | 25 | 28 | 26 | 26 | 24 | 24 | 21 | 30 | 21 |
| | YEAR OF OCCURRENCE | | 1996 | 2001 | 2002 | 1997 | 2000 | 2005 | 2003 | 1998 | 2001 | 1996 | 2005 | 1998 | NOV 2005 |
| | MAXIMUM 5-SECOND | | | | | | | | | | | | | | |
| | SPEED (MPH) | 11 | 56 | 56 | 69 | 61 | 68 | 53 | 52 | 54 | 47 | 59 | 66 | 56 | 69 |
| | DIR. (TENS OF DEGS) | | 25 | 26 | 23 | 27 | 27 | 28 | 29 | 26 | 23 | 25 | 24 | 31 | 23 |
| | YEAR OF OCCURRENCE | | 1996 | 2001 | 2002 | 2003 | 1999 | 2005 | 2005 | 1998 | 2001 | 1996 | 1998 | 1998 | MAR 2002 |
| PRECIPITATION | NORMAL (IN) | 30 | 1.93 | 1.88 | 2.62 | 3.24 | 3.14 | 3.80 | 2.80 | 3.19 | 2.84 | 2.35 | 2.78 | 2.64 | 33.21 |
| | MAXIMUM MONTHLY (IN) | 51 | 4.61 | 5.39 | 5.70 | 6.10 | 6.80 | 8.48 | 9.19 | 8.47 | 8.10 | 6.26 | 6.86 | 6.81 | 9.19 |
| | YEAR OF OCCURRENCE | | 1965 | 1990 | 1985 | 1977 | 2000 | 1981 | 2006 | 1965 | 1972 | 2001 | 1982 | 1967 | JUL 2006 |
| | MINIMUM MONTHLY (IN) | 51 | 0.27 | 0.27 | 0.58 | 0.88 | 0.96 | 0.27 | 0.34 | 0.40 | 0.58 | 0.27 | 0.55 | 0.54 | 0.27 |
| | YEAR OF OCCURRENCE | | 1961 | 1969 | 1958 | 1962 | 1964 | 1988 | 1995 | 1976 | 1963 | 2005 | 1976 | 1958 | OCT 2005 |
| | MAXIMUM IN 24 HOURS (IN) | 51 | 1.78 | 2.59 | 2.60 | 3.43 | 2.34 | 3.21 | 4.39 | 2.42 | 3.97 | 3.21 | 3.17 | 3.53 | 4.39 |
| | YEAR OF OCCURRENCE | | 1959 | 1990 | 1985 | 1977 | 1991 | 1978 | 1969 | 1972 | 1972 | 1988 | 1982 | 1967 | JUL 1969 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | PRECIPITATION >= 0.01 | 30 | 13.6 | 10.6 | 12.5 | 12.7 | 11.9 | 10.6 | 9.4 | 9.6 | 9.9 | 9.9 | 12.0 | 13.6 | 136.3 |
| | PRECIPITATION >= 1.00 | 30 | 0.1 | 0.2 | 0.2 | 0.3 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.3 | 0.4 | 0.3 | 4.9 |

## Table 2.7-4 Local Climatological Data Summary for Toledo, Ohio (Sheet 4 of 4)

**NORMAL, MEANS, and EXTREMES**
**TOLEDO (KTOL)**

| LATITUDE: 41° 35'N | LONGITUDE: -83° 48'W | ELEVATION (FT): GRND: 674 BARO: 693 | TIME ZONE: EASTERN (UTC-5) | WBAN: 94830 |
|---|---|---|---|---|

| | ELEMENT | POR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNOWFALL | NORMAL (IN) | 30 | 10.8 | 8.5 | 5.6 | 1.3 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 2.6 | 8.3 | 37.4 |
| | MAXIMUM MONTHLY (IN) | 45 | 30.8 | 16.6 | 17.7 | 12.0 | 1.3 | T | T | T | T | 2.0 | 17.9 | 24.2 | 30.8 |
| | YEAR OF OCCURRENCE | | 1978 | 1994 | 1993 | 1957 | 1989 | 1995 | 1992 | 1994 | 1993 | 1989 | 1966 | 1977 | JAN 1978 |
| | MAXIMUM IN 24 HOURS (IN) | 45 | 12.0 | 7.7 | 9.7 | 9.8 | 1.3 | T | T | T | T | 1.8 | 8.3 | 13.9 | 13.9 |
| | YEAR OF OCCURRENCE | | 2005 | 1981 | 1993 | 1957 | 1989 | 1995 | 1992 | 1994 | 1993 | 1989 | 1966 | 1974 | DEC 1974 |
| | MAXIMUM SNOW DEPTH (IN) | 43 | 17 | 19 | 8 | 10 | 1 | 0 | 0 | 0 | 0 | 1 | 8 | 16 | 19 |
| | YEAR OF OCCURRENCE | | 1978 | 1978 | 2002 | 1957 | 1989 | | | | | 1989 | 1966 | 1977 | FEB 1978 |
| | NORMAL NO. DAYS WITH: | | | | | | | | | | | | | | |
| | SNOWFALL >= 1.0 | 30 | 3.3 | 2.8 | 1.7 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1.0 | 2.5 | 11.8 |

Source: Reference 2.7-3

**Table 2.7-5 Climatological Normals for National Weather Service First-Order and Cooperative Observation Stations in the Region Surrounding the Fermi Site**

| Station | Normal Annual Temperatures (°F) | | | Normal Annual Precipitation | |
|---|---|---|---|---|---|
| | Daily Maximum | Daily Minimum | Daily Normal | Precipitation (inches) | Snowfall (inches) |
| Monroe | 57.4 [A] | 40.4 [A] | 49.0 [A] | 33.4 [A] | 25.3 [A] |
| Detroit (Detroit Metropolitan Airport) | 58.4 [B] | 41.0 [B] | 49.7 [B] | 32.9 [B] | 44.0 [B] |
| Windsor, ON | 57.2 [C] | 40.8 [C] | 48.9 [C] | 36.2 [C] | 49.8 [C] |
| Ann Arbor (Univ. of Michigan) | 58.1 [D] | 39.9 [D] | 49.0 [D] | 35.4 [D] | 52.1 [D] |
| Toledo, OH | 58.9 [E] | 40.0 [E] | 49.5 [E] | 33.2 [E] | 37.4 [E] |
| Adrian 2 NNE | 59.1 [F] | 37.3 [F] | 48.3 [F] | 35.2 [F] | 29.2 [F] |
| Flint | 56.8 [G] | 36.7 [G] | 46.8 [G] | 31.6 [G] | 48.3 [G] |

Source A: Reference 2.7-4
Source B: Reference 2.7-1
Source C: Reference 2.7-5
Source D: Reference 2.7-6
Source E: Reference 2.7-3
Source F: Reference 2.7-7
Source G: Reference 2.7-2

## Table 2.7-6 Climatological Extremes for National Weather Service First-Order and Cooperative Observation Stations Surrounding the Fermi Site

| Parameter | Monroe | Detroit[1] | Windsor, ON | Ann Arbor (Univ. of Michigan) | Toledo, OH | Adrian 2 NNE | Flint |
|---|---|---|---|---|---|---|---|
| Maximum Temperature | 106 (A) | 105 (B) | 104 (D) | 105 (A) | 104 (E) | 108 (A) | 101 (G) |
| Minimum Temperature | -21 (A) | -24 (B) | -20 (D) | -23 (A) | -20 (F) | -26 (A) | -25 (G) |
| Max 24-hr Precipitation (inches)[2] | 4.22 (A) | 4.78 (C) | 3.72 (D) | 4.54 (A) | 4.39 (E) | 4.74 (A) | 6.04 (G) |
| Max Monthly Precipitation (inches) | 9.03 (A) | 8.76 (B) | N/A | 10.78 (A) | 9.19 (F) | 11.17 (A) | 11.04 (G) |
| Max 24-hr Snowfall (inches) | 20.0 (A) | 24.5 (B) | 14.5 (D) | 20.0 (A) | 13.9 (E) | 15.0 (A) | 19.8 (G) |
| Max Monthly Snowfall (inches) | 29.0 (A) | 38.4 (B) | N/A | 58.5 (A) | 30.8 (F) | 34.5 (A) | 35.3 (G) |

Notes:
1. Extreme values for Detroit were observed in the vicinity of the meteorological stations at Detroit City Airport and Willow Run Airport.
2. (H) The highest reported 24-hour precipitation amount for COOP stations was reported at Grosse Pointe Farms in July 1976 with a value of 5.13 inches.

Source A: Reference 2.7-10
Source B: Reference 2.7-11
Source C: Reference 2.7-12
Source D: Reference 2.7-5
Source E: Reference 2.7-3
Source F: Reference 2.7-13
Source G: Reference 2.7-2
Source H: Reference 2.7-14
Source I: Reference 2.7-15

**Table 2.7-7 Mean Monthly and Annual Mixing Heights (Meters) at White Lake, Michigan (2003 - 2007)**

| Month | Morning | Afternoon |
|---|---|---|
| January | 887 | 796 |
| February | 833 | 913 |
| March | 834 | 1176 |
| April | 694 | 1482 |
| May | 670 | 1561 |
| June | 588 | 1748 |
| July | 663 | 1739 |
| August | 662 | 1530 |
| September | 542 | 1376 |
| October | 805 | 1248 |
| November | 809 | 943 |
| December | 853 | 718 |
| Annual | 737 | 1274 |

Source: Reference 2.7-24

# Table 2.7-8 Annual Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2, 3]

| Annual | | |
|---|---|---|
| **Duration (Hours)** | **Number of Observations** | **Probability of Occurrence (%)** |
| 1 | 222 | 13.3 |
| 2 | 159 | 9.5 |
| 3 | 137 | 8.2 |
| 4 | 101 | 6.0 |
| 5 | 103 | 6.1 |
| 6 | 90 | 5.4 |
| 7 | 66 | 3.9 |
| 8 | 65 | 3.9 |
| 9 | 75 | 4.5 |
| 10 | 89 | 5.3 |
| 11 | 101 | 6.0 |
| 12 | 114 | 6.8 |
| 13 | 91 | 5.4 |
| 14 | 73 | 4.4 |
| 15 | 50 | 3.0 |
| 16 | 35 | 2.1 |
| 17 | 18 | 1.1 |
| 18 | 14 | 0.8 |
| 19 | 10 | 0.6 |
| 20 | 5 | 0.3 |
| 21 | 3 | 0.2 |
| 22 | 5 | 0.3 |
| 23 | 2 | 0.1 |
| 24 | 5 | 0.3 |
| 25+ | 21 | 1.3 |

Notes:
1. The longest inversion lasted 76 hours.
2. An inversion was present a total of 13,098 hours of a possible 42,800 hours during the 5-year period.
3. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-9 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**January**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 10 | 10.1 |
| 2 | 6 | 6.1 |
| 3 | 11 | 11.1 |
| 4 | 4 | 4.0 |
| 5 | 11 | 11.1 |
| 6 | 7 | 7.1 |
| 7 | 6 | 6.1 |
| 8 | 3 | 3.0 |
| 9 | 4 | 4.0 |
| 10 | 6 | 6.1 |
| 11 | 2 | 2.0 |
| 12 | 2 | 2.0 |
| 13 | 3 | 3.0 |
| 14 | 0 | 0.0 |
| 15 | 5 | 5.1 |
| 16 | 2 | 2.0 |
| 17 | 0 | 0.0 |
| 18 | 1 | 1.0 |
| 19 | 1 | 1.0 |
| 20 | 1 | 1.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 2 | 2.0 |
| 25+ | 6 | 6.1 |

Notes:
1. The longest inversion lasted 74 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-10 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**February**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 13 | 13.5 |
| 2 | 9 | 9.4 |
| 3 | 8 | 8.3 |
| 4 | 7 | 7.3 |
| 5 | 5 | 5.2 |
| 6 | 7 | 7.3 |
| 7 | 6 | 6.3 |
| 8 | 4 | 4.2 |
| 9 | 5 | 5.2 |
| 10 | 6 | 6.3 |
| 11 | 4 | 4.2 |
| 12 | 4 | 4.2 |
| 13 | 2 | 2.1 |
| 14 | 3 | 3.1 |
| 15 | 4 | 4.2 |
| 16 | 1 | 1.0 |
| 17 | 2 | 2.1 |
| 18 | 1 | 1.0 |
| 19 | 1 | 1.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 2 | 2.1 |

Notes:
1. The longest inversion lasted 76 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-11 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**March**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 23 | 15.2 |
| 2 | 14 | 9.3 |
| 3 | 14 | 9.3 |
| 4 | 7 | 4.6 |
| 5 | 5 | 3.3 |
| 6 | 12 | 7.9 |
| 7 | 8 | 5.3 |
| 8 | 5 | 3.3 |
| 9 | 5 | 3.3 |
| 10 | 3 | 2.0 |
| 11 | 6 | 4.0 |
| 12 | 3 | 2.0 |
| 13 | 7 | 4.6 |
| 14 | 9 | 6.0 |
| 15 | 5 | 3.3 |
| 16 | 5 | 3.3 |
| 17 | 2 | 1.3 |
| 18 | 3 | 2.0 |
| 19 | 2 | 1.3 |
| 20 | 1 | 0.7 |
| 21 | 0 | 0.0 |
| 22 | 1 | 0.7 |
| 23 | 2 | 1.3 |
| 24 | 1 | 0.7 |
| 25+ | 4 | 2.6 |

Notes:
1. The longest inversion lasted 51 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-12 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**April**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 13 | 9.9 |
| 2 | 17 | 13.0 |
| 3 | 12 | 9.2 |
| 4 | 8 | 6.1 |
| 5 | 8 | 6.1 |
| 6 | 6 | 4.6 |
| 7 | 4 | 3.1 |
| 8 | 5 | 3.8 |
| 9 | 1 | 0.8 |
| 10 | 6 | 4.6 |
| 11 | 5 | 3.8 |
| 12 | 13 | 9.9 |
| 13 | 7 | 5.3 |
| 14 | 3 | 2.3 |
| 15 | 0 | 0.0 |
| 16 | 2 | 1.5 |
| 17 | 1 | 0.8 |
| 18 | 2 | 1.5 |
| 19 | 2 | 1.5 |
| 20 | 3 | 2.3 |
| 21 | 1 | 0.8 |
| 22 | 1 | 0.8 |
| 23 | 0 | 0.0 |
| 24 | 1 | 0.8 |
| 25+ | 5 | 3.8 |

Notes:
1. The longest inversion lasted 67 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-13 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

May

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 27 | 17.5 |
| 2 | 15 | 9.7 |
| 3 | 8 | 5.2 |
| 4 | 13 | 8.4 |
| 5 | 10 | 6.5 |
| 6 | 9 | 5.8 |
| 7 | 9 | 5.8 |
| 8 | 10 | 6.5 |
| 9 | 6 | 3.9 |
| 10 | 9 | 5.8 |
| 11 | 11 | 7.1 |
| 12 | 15 | 9.7 |
| 13 | 7 | 4.5 |
| 14 | 1 | 0.6 |
| 15 | 1 | 0.6 |
| 16 | 1 | 0.6 |
| 17 | 1 | 0.6 |
| 18 | 0 | 0.0 |
| 19 | 0 | 0.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 1 | 0.6 |
| 25+ | 0 | 0.0 |

Notes:
1. The longest inversion lasted 24 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-14 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**June**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 21 | 12.2 |
| 2 | 21 | 12.2 |
| 3 | 14 | 8.1 |
| 4 | 10 | 5.8 |
| 5 | 9 | 5.2 |
| 6 | 9 | 5.2 |
| 7 | 10 | 5.8 |
| 8 | 8 | 4.7 |
| 9 | 8 | 4.7 |
| 10 | 14 | 8.1 |
| 11 | 24 | 14.0 |
| 12 | 13 | 7.6 |
| 13 | 4 | 2.3 |
| 14 | 4 | 2.3 |
| 15 | 1 | 0.6 |
| 16 | 1 | 0.6 |
| 17 | 1 | 0.6 |
| 18 | 0 | 0.0 |
| 19 | 0 | 0.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 0 | 0.0 |

Notes:
1. The longest inversion lasted 17 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-15 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**July**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 26 | 15.1 |
| 2 | 16 | 9.3 |
| 3 | 16 | 9.3 |
| 4 | 7 | 4.1 |
| 5 | 20 | 11.6 |
| 6 | 11 | 6.4 |
| 7 | 2 | 1.2 |
| 8 | 5 | 2.9 |
| 9 | 10 | 5.8 |
| 10 | 15 | 8.7 |
| 11 | 17 | 9.9 |
| 12 | 19 | 11.0 |
| 13 | 8 | 4.7 |
| 14 | 0 | 0.0 |
| 15 | 0 | 0.0 |
| 16 | 0 | 0.0 |
| 17 | 0 | 0.0 |
| 18 | 0 | 0.0 |
| 19 | 0 | 0.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 0 | 0.0 |

Notes:
1. The longest inversion lasted 13 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-16 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**August**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 31 | 17.2 |
| 2 | 16 | 8.9 |
| 3 | 14 | 7.8 |
| 4 | 12 | 6.7 |
| 5 | 6 | 3.3 |
| 6 | 7 | 3.9 |
| 7 | 3 | 1.7 |
| 8 | 6 | 3.3 |
| 9 | 9 | 5.0 |
| 10 | 9 | 5.0 |
| 11 | 19 | 10.6 |
| 12 | 18 | 10.0 |
| 13 | 23 | 12.8 |
| 14 | 7 | 3.9 |
| 15 | 0 | 0.0 |
| 16 | 0 | 0.0 |
| 17 | 0 | 0.0 |
| 18 | 0 | 0.0 |
| 19 | 0 | 0.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 0 | 0.0 |

Notes:
1. The longest inversion lasted 14 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-17 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**September**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 8 | 5.6 |
| 2 | 9 | 6.3 |
| 3 | 9 | 6.3 |
| 4 | 7 | 4.9 |
| 5 | 10 | 7.0 |
| 6 | 8 | 5.6 |
| 7 | 2 | 1.4 |
| 8 | 5 | 3.5 |
| 9 | 7 | 4.9 |
| 10 | 5 | 3.5 |
| 11 | 5 | 3.5 |
| 12 | 17 | 11.9 |
| 13 | 18 | 12.6 |
| 14 | 25 | 17.5 |
| 15 | 7 | 4.9 |
| 16 | 1 | 0.7 |
| 17 | 0 | 0.0 |
| 18 | 0 | 0.0 |
| 19 | 0 | 0.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 0 | 0.0 |

Notes:
1. The longest inversion lasted 16 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-18 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**October**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 19 | 12.3 |
| 2 | 14 | 9.0 |
| 3 | 11 | 7.1 |
| 4 | 12 | 7.7 |
| 5 | 5 | 3.2 |
| 6 | 5 | 3.2 |
| 7 | 8 | 5.2 |
| 8 | 6 | 3.9 |
| 9 | 8 | 5.2 |
| 10 | 4 | 2.6 |
| 11 | 5 | 3.2 |
| 12 | 3 | 1.9 |
| 13 | 8 | 5.2 |
| 14 | 14 | 9.0 |
| 15 | 18 | 11.6 |
| 16 | 9 | 5.8 |
| 17 | 2 | 1.3 |
| 18 | 2 | 1.3 |
| 19 | 1 | 0.6 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 1 | 0.6 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 0 | 0.0 |

Notes:
1. The longest inversion lasted 22 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-19 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**November**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 19 | 16.0 |
| 2 | 8 | 6.7 |
| 3 | 6 | 5.0 |
| 4 | 9 | 7.6 |
| 5 | 11 | 9.2 |
| 6 | 3 | 2.5 |
| 7 | 3 | 2.5 |
| 8 | 6 | 5.0 |
| 9 | 10 | 8.4 |
| 10 | 7 | 5.9 |
| 11 | 3 | 2.5 |
| 12 | 5 | 4.2 |
| 13 | 1 | 0.8 |
| 14 | 3 | 2.5 |
| 15 | 5 | 4.2 |
| 16 | 6 | 5.0 |
| 17 | 5 | 4.2 |
| 18 | 3 | 2.5 |
| 19 | 2 | 1.7 |
| 20 | 0 | 0.0 |
| 21 | 2 | 1.7 |
| 22 | 0 | 0.0 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 1 | 0.8 |

Notes:
1. The longest inversion lasted 48 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-20 Monthly Temperature Inversion Frequency and Persistence at the Fermi Site (2003 - 2007)[1, 2]

**December**

| Duration (Hours) | Number of Observations | Probability of Occurrence (%) |
|---|---|---|
| 1 | 12 | 11.7 |
| 2 | 14 | 13.6 |
| 3 | 14 | 13.6 |
| 4 | 5 | 4.9 |
| 5 | 3 | 2.9 |
| 6 | 6 | 5.8 |
| 7 | 5 | 4.9 |
| 8 | 2 | 1.9 |
| 9 | 2 | 1.9 |
| 10 | 5 | 4.9 |
| 11 | 0 | 0.0 |
| 12 | 2 | 1.9 |
| 13 | 3 | 2.9 |
| 14 | 4 | 3.9 |
| 15 | 4 | 3.9 |
| 16 | 7 | 6.8 |
| 17 | 4 | 3.9 |
| 18 | 2 | 1.9 |
| 19 | 1 | 1.0 |
| 20 | 0 | 0.0 |
| 21 | 0 | 0.0 |
| 22 | 2 | 1.9 |
| 23 | 0 | 0.0 |
| 24 | 0 | 0.0 |
| 25+ | 3 | 2.9 |

Notes:
1. The longest inversion lasted 47 hours.
2. Probability of occurrence represents that, if an inversions occurs, the probability of its duration will be equal to the number of hours specified.

## Table 2.7-21 Freezing Rain Events in the Five-County Area Surrounding the Fermi Site (1993-2007)

| Date | Reported Accumulation (in)(2) |
|---|---|
| 1/21/1993 | 0.40 |
| 3/4/1993(1) | -- |
| 1/27/1994 | 0.25 |
| 2/27/1995 | 0.25 |
| 3/6/1995 | 0.25 |
| 4/10/1995 | Trace |
| 12/13/1995 | 0.25 |
| 3/13/1997 | 1.5-2.5 |
| 1/13/1998(1) | -- |
| 1/2/1999(1) | -- |
| 3/11/2000 | Trace |
| 12/11/2000 | 0.25 |
| 12/13/2000 | Trace |
| 1/29/2001 | 0.20 |
| 2/24/2001 | 0.25 |
| 1/30/2002 | 0.50 |
| 3/24/2002 | Trace |
| 3/26/2002 | 0.50 |
| 1/4/2004 | Trace |
| 1/26/2004 | 0.13 |
| 1/5/2005 | 0.75 |
| 1/14/2007 | 0.50 |
| 2/25/2007 | 0.50 |
| 3/1/2007 | 0.20 |

Notes:
1. Ice accumulations were not available for selected dates from the NCDC Storm Database.
2. 3 inches of ice accumulation occurred during the ice freezing rain event of January 26-27, 1967 across northern Ohio.

Source: Reference 2.7-29 and Reference 2.7-38

## Table 2.7-22 Monthly and Annual Temperature Data for Detroit Metropolitan Airport and Fermi Site (2003 - 2007) (ºF) (Sheet 1 of 2)

| Period | | Upper Level – 60-Meter Fermi Site | Lower Level – 10-Meter Fermi Site | Single Level–10 m Detroit Metropolitan Airport |
|---|---|---|---|---|
| January | Mean | 25.7 | 26.2 | 27.4 |
| | Maximum | 57.8 | 55.6 | 57.9 |
| | Minimum | -0.6 | -3.8 | -5.1 |
| February | Mean | 25.2 | 25.8 | 26.1 |
| | Maximum | 53.5 | 53.3 | 57.2 |
| | Minimum | -4.1 | -3.5 | -4.0 |
| March | Mean | 35.8 | 35.9 | 37.1 |
| | Maximum | 76.9 | 78.5 | 81.0 |
| | Minimum | -2.9 | -2.9 | -2.9 |
| April | Mean | 48.2 | 48.4 | 49.3 |
| | Maximum | 86.9 | 85.5 | 86.0 |
| | Minimum | 19.8 | 20.5 | 21.0 |
| May | Mean | 57.9 | 58.4 | 59.2 |
| | Maximum | 85.0 | 88.0 | 91.4 |
| | Minimum | 34.3 | 33.6 | 32.0 |
| June | Mean | 68.7 | 69.2 | 69.7 |
| | Maximum | 91.8 | 94.2 | 95.0 |
| | Minimum | 44.5 | 42.3 | 39.9 |
| July | Mean | 72.4 | 72.9 | 73.5 |
| | Maximum | 91.9 | 94.3 | 95.0 |
| | Minimum | 52.3 | 52.2 | 50.0 |
| August | Mean | 71.8 | 72.2 | 72.3 |
| | Maximum | 92.0 | 93.7 | 96.8 |
| | Minimum | 51.9 | 51.7 | 52.0 |
| September | Mean | 65.4 | 65.6 | 65.2 |
| | Maximum | 83.7 | 85.8 | 90.0 |
| | Minimum | 41.9 | 39.1 | 39.0 |

## Table 2.7-22 Monthly and Annual Temperature Data for Detroit Metropolitan Airport and Fermi Site (2003 - 2007) (ºF) (Sheet 2 of 2)

| Period | | Upper Level – 60-Meter Fermi Site | Lower Level – 10-Meter Fermi Site | Single Level–10 m Detroit Metropolitan Airport |
|---|---|---|---|---|
| **October** | Mean | 53.8 | 53.9 | 53.5 |
| | Maximum | 85.7 | 87.4 | 89.6 |
| | Minimum | 31.8 | 32.0 | 31.5 |
| **November** | Mean | 42.3 | 42.6 | 42.3 |
| | Maximum | 72.4 | 72.1 | 75.0 |
| | Minimum | 12.4 | 13.5 | 12.2 |
| **December** | Mean | 30.6 | 31.0 | 31.2 |
| | Maximum | 56.8 | 57.5 | 59.0 |
| | Minimum | -2.0 | -2.4 | -2.9 |
| **Annual** | Mean | 50.0 | 50.3 | 50.2 |
| | Maximum | 92.0 | 94.3 | 96.8 |
| | Minimum | -4.1 | -3.8 | -5.1 |

Source: Reference 2.7-41

## Table 2.7-23 Monthly and Annual Dew-point Temperature (°F) Summaries for the Fermi Site (2003 - 2007)

| | Mean Dew-point | Measured Dew-point Extremes | | Mean Dew-point Diurnal Range |
|---|---|---|---|---|
| | | Maximum | Minimum | |
| January | 16.6 | 50.2 | -14.7 | 11.3 |
| February | 15.7 | 45.4 | -14.5 | 10.8 |
| March | 24.5 | 57.2 | -14.8 | 10.7 |
| April | 33.3 | 56.1 | 8.9 | 9.7 |
| May | 45.1 | 69.0 | 18.0 | 10.2 |
| June | 54.7 | 71.1 | 35.8 | 9.0 |
| July | 58.1 | 72.4 | 38.8 | 8.1 |
| August | 58.1 | 74.7 | 36.7 | 7.7 |
| September | 51.3 | 68.1 | 30.0 | 8.7 |
| October | 40.6 | 66.0 | 19.9 | 9.3 |
| November | 31.7 | 58.8 | -6.4 | 10.5 |
| December | 21.7 | 50.2 | -21.8 | 9.4 |
| Annual | 37.6 | 74.7 | -21.8 | 9.6 |

## Table 2.7-24 Hours with Precipitation and Hourly Precipitation Rate Distribution for Detroit Metropolitan Airport (2003-2007)

| Month | Trace | 0.01-0.09 in | 0.10-0.24 in | 0.25-0.49 in | 0.50-0.99 in | ≥1.00 in | Hours with Precipitation | Number of Observations |
|---|---|---|---|---|---|---|---|---|
| January | 684 | 287 | 21 | 1 | 0 | 0 | 993 | 3720 |
| February | 524 | 199 | 11 | 0 | 1 | 0 | 735 | 3384 |
| March | 463 | 213 | 28 | 1 | 1 | 0 | 706 | 3720 |
| April | 339 | 176 | 26 | 1 | 0 | 0 | 542 | 3600 |
| May | 295 | 230 | 45 | 15 | 4 | 0 | 589 | 3720 |
| June | 176 | 131 | 17 | 6 | 5 | 1 | 336 | 3600 |
| July | 162 | 142 | 33 | 10 | 4 | 0 | 351 | 3720 |
| August | 182 | 140 | 27 | 17 | 7 | 0 | 373 | 3720 |
| September | 145 | 138 | 27 | 5 | 0 | 0 | 315 | 3600 |
| October | 241 | 210 | 23 | 1 | 0 | 0 | 475 | 3720 |
| November | 332 | 279 | 41 | 3 | 1 | 0 | 656 | 3600 |
| December | 576 | 315 | 25 | 3 | 0 | 0 | 919 | 3720 |
| Annual | 4119 | 2460 | 324 | 63 | 23 | 1 | 6990 | 43824 |
| Percent of Total Hours | 9.40% | 5.61% | 0.74% | 0.14% | 0.05% | 0.002% | 15.95% | |

Source: Reference 2.7-44

## Table 2.7-25 Mean Monthly and Annual Summaries (Hours) of Fog and Heavy Fog for Detroit, Michigan (1961-1995)

| | Mean Number of Hours and Frequency of Hours | | | |
|---|---|---|---|---|
| **Month** | **Fog** | | **Heavy Fog** | |
| January | 99.4 | 13.4% | 7.9 | 1.1% |
| February | 93.9 | 13.9% | 8.6 | 1.3% |
| March | 107.4 | 14.4% | 9.0 | 1.2% |
| April | 73.6 | 10.2% | 2.3 | 0.3% |
| May | 73.2 | 9.8% | 1.6 | 0.2% |
| June | 64.9 | 9.0% | 1.6 | 0.2% |
| July | 69.1 | 9.3% | 1.3 | 0.2% |
| August | 96.7 | 13.0% | 3.2 | 0.4% |
| September | 97.7 | 13.6% | 3.9 | 0.5% |
| October | 99.8 | 13.4% | 4.9 | 0.7% |
| November | 106.8 | 14.8% | 5.1 | 0.7% |
| December | 129.6 | 17.4% | 10.8 | 1.5% |
| Annual | 1112.0 | 12.7% | 60.2 | 0.7% |

Source: Reference 2.7-39 and Reference 2.7-40

**Table 2.7-26 Monthly and Annual Mean Wind Speeds (mph) for Detroit Metropolitan Airport and Fermi Site (2003 - 2007)**

| Period | Upper Level - 60 m Fermi Site | Lower Level – 10 m Fermi Site | Single Level – 10 m Detroit Metropolitan Airport |
|---|---|---|---|
| January | 14.33 | 7.45 | 10.30 |
| February | 13.61 | 7.23 | 9.83 |
| March | 14.13 | 7.47 | 9.66 |
| April | 14.65 | 8.21 | 10.25 |
| May | 12.36 | 6.72 | 8.19 |
| June | 10.85 | 5.70 | 7.50 |
| July | 10.29 | 5.12 | 7.56 |
| August | 10.10 | 5.01 | 6.83 |
| September | 11.38 | 5.68 | 7.02 |
| October | 13.03 | 6.06 | 8.49 |
| November | 13.86 | 7.02 | 9.36 |
| December | 14.37 | 7.28 | 10.12 |
| Annual | 12.74 | 6.57 | 8.75 |

Source: Reference 2.7-41

# Table 2.7-27 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
All Wind Speeds

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 222 | 181 | 160 | 180 | 189 | 209 | 203 | 227 | 247 | 292 | 320 | 328 | 309 | 322 | 287 | 225 | **44.37%** |
| 3 | 100 | 70 | 74 | 91 | 74 | 100 | 117 | 111 | 125 | 160 | 175 | 166 | 134 | 149 | 133 | 104 | **21.42%** |
| 4 | 50 | 46 | 47 | 47 | 49 | 69 | 65 | 51 | 49 | 106 | 99 | 91 | 81 | 79 | 85 | 52 | **12.13%** |
| 5 | 30 | 22 | 19 | 24 | 24 | 47 | 41 | 35 | 46 | 58 | 64 | 49 | 27 | 63 | 34 | 40 | **7.09%** |
| 6 | 8 | 13 | 26 | 12 | 12 | 31 | 30 | 13 | 20 | 38 | 30 | 41 | 20 | 39 | 27 | 16 | **4.28%** |
| 7 | 8 | 10 | 14 | 7 | 10 | 20 | 23 | 11 | 18 | 32 | 30 | 30 | 17 | 23 | 15 | 15 | **3.22%** |
| 8 | 8 | 6 | 10 | 7 | 17 | 11 | 10 | 10 | 4 | 34 | 21 | 15 | 7 | 12 | 10 | 11 | **2.20%** |
| 9 | 6 | 4 | 5 | 5 | 8 | 5 | 5 | 5 | 6 | 17 | 18 | 7 | 4 | 5 | 7 | 16 | **1.40%** |
| 10 | 5 | 2 | 5 | 3 | 4 | 1 | 4 | 1 | 2 | 14 | 17 | 8 | 3 | 5 | 1 | 7 | **0.93%** |
| 11 | 0 | 0 | 4 | 4 | 3 | 6 | 1 | 2 | 2 | 17 | 5 | 1 | 5 | 7 | 2 | 5 | **0.73%** |
| 12 | 3 | 0 | 3 | 1 | 3 | 4 | 2 | 0 | 1 | 8 | 12 | 3 | 0 | 4 | 2 | 1 | **0.53%** |
| 13 | 2 | 0 | 0 | 0 | 4 | 6 | 2 | 0 | 0 | 2 | 2 | 4 | 2 | 2 | 0 | 2 | **0.32%** |
| 14 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 3 | 2 | 2 | 2 | 2 | 0 | 3 | **0.22%** |
| 15 | 1 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 6 | 6 | 0 | 2 | 1 | 1 | 1 | **0.27%** |
| 16 | 0 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 4 | 0 | 2 | 2 | 1 | 0 | 0 | **0.16%** |
| 17 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 4 | 2 | 1 | 1 | 0 | 0 | 2 | **0.15%** |
| 18 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | **0.08%** |
| 19 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 1 | 0 | 0 | **0.10%** |
| 20 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 0 | 0 | 1 | 0 | **0.14%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | **0.06%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.01%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | **0.03%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.01%** |
| 25 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | **0.07%** |
| 26 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.02%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 31 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | 5.10% | 4.04% | 4.24% | 4.39% | 4.61% | 5.82% | 5.72% | 5.30% | 5.95% | 9.17% | 9.30% | 8.59% | 7.02% | 8.14% | 6.90% | 5.70% | |
| AVE PERSISTENT HOURS | **3.49** | **3.19** | **3.84** | **3.47** | **3.85** | **3.78** | **3.56** | **3.17** | **3.30** | **4.49** | **4.27** | **3.72** | **3.32** | **3.57** | **3.34** | **3.74** | |

THE LONGEST PERSISTENT WIND WAS FROM THE NORTH AND SOUTHWEST AND LASTED 31 HOURS

# Table 2.7-28 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
0-5 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 93 | 87 | 27 | 20 | 35 | 62 | 49 | 84 | 98 | 114 | 169 | 230 | 212 | 217 | 198 | 144 | **62.74%** |
| 3 | 28 | 31 | 8 | 7 | 7 | 11 | 19 | 16 | 26 | 40 | 63 | 92 | 73 | 94 | 77 | 41 | **21.60%** |
| 4 | 9 | 7 | 3 | 0 | 2 | 8 | 3 | 1 | 14 | 14 | 21 | 41 | 29 | 39 | 29 | 17 | **8.09%** |
| 5 | 5 | 4 | 0 | 0 | 1 | 1 | 4 | 3 | 4 | 5 | 15 | 16 | 5 | 31 | 13 | 8 | **3.92%** |
| 6 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 4 | 5 | 10 | 2 | 11 | 3 | 1 | **1.43%** |
| 7 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 3 | 2 | 9 | 1 | 8 | 4 | 5 | **1.26%** |
| 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 3 | 1 | 1 | **0.38%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | **0.14%** |
| 10 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.10%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | **0.14%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.03%** |
| 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | **0.10%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **4.84%** | **4.44%** | **1.33%** | **0.96%** | **1.54%** | **2.90%** | **2.59%** | **3.55%** | **4.98%** | **6.18%** | **9.45%** | **13.75%** | **11.05%** | **13.92%** | **11.09%** | **7.44%** | |

# Table 2.7-29 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
5-10 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 92 | 86 | 103 | 132 | 120 | 168 | 167 | 171 | 159 | 208 | 215 | 149 | 102 | 113 | 120 | 121 | **47.07%** |
| 3 | 49 | 39 | 58 | 64 | 45 | 73 | 71 | 73 | 68 | 113 | 102 | 70 | 61 | 60 | 51 | 50 | **22.14%** |
| 4 | 20 | 14 | 38 | 26 | 28 | 35 | 57 | 36 | 35 | 67 | 44 | 41 | 39 | 31 | 32 | 32 | **12.16%** |
| 5 | 20 | 9 | 17 | 16 | 9 | 30 | 31 | 19 | 24 | 44 | 19 | 24 | 19 | 27 | 15 | 26 | **7.38%** |
| 6 | 6 | 2 | 18 | 5 | 5 | 14 | 23 | 9 | 9 | 16 | 14 | 16 | 8 | 12 | 14 | 13 | **3.89%** |
| 7 | 6 | 2 | 6 | 0 | 3 | 10 | 12 | 9 | 11 | 27 | 11 | 12 | 5 | 6 | 3 | 6 | **2.73%** |
| 8 | 4 | 0 | 8 | 2 | 5 | 7 | 3 | 4 | 0 | 21 | 8 | 6 | 4 | 5 | 6 | 6 | **1.88%** |
| 9 | 1 | 0 | 4 | 1 | 0 | 3 | 5 | 1 | 2 | 6 | 6 | 3 | 3 | 1 | 4 | 3 | **0.91%** |
| 10 | 1 | 1 | 3 | 1 | 2 | 0 | 1 | 1 | 1 | 4 | 5 | 3 | 2 | 3 | 1 | 2 | **0.66%** |
| 11 | 0 | 0 | 3 | 1 | 0 | 1 | 1 | 0 | 1 | 3 | 4 | 2 | 1 | 0 | 0 | 0 | **0.36%** |
| 12 | 0 | 0 | 2 | 0 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 1 | 0 | **0.30%** |
| 13 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | **0.21%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **0.04%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **0.06%** |
| 16 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **0.06%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **0.06%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **0.04%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **0.02%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **4.23%** | **3.24%** | **5.50%** | **5.24%** | **4.61%** | **7.36%** | **7.91%** | **6.83%** | **6.58%** | **10.93%** | **9.07%** | **7.06%** | **5.22%** | **5.50%** | **5.24%** | **5.48%** | |

## Table 2.7-30 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
10-15 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 27 | 24 | 25 | 43 | 55 | 38 | 14 | 21 | 24 | 66 | 75 | 28 | 14 | 22 | 14 | 16 | **43.32%** |
| 3 | 11 | 9 | 7 | 19 | 36 | 24 | 8 | 5 | 11 | 40 | 42 | 8 | 8 | 8 | 7 | 12 | **21.83%** |
| 4 | 11 | 10 | 5 | 7 | 12 | 17 | 2 | 2 | 8 | 20 | 19 | 5 | 3 | 11 | 6 | 6 | **12.33%** |
| 5 | 6 | 3 | 6 | 4 | 11 | 2 | 2 | 3 | 1 | 21 | 13 | 8 | 3 | 5 | 5 | 6 | **8.48%** |
| 6 | 2 | 3 | 4 | 2 | 3 | 5 | 3 | 1 | 0 | 11 | 8 | 1 | 1 | 4 | 1 | 2 | **4.37%** |
| 7 | 0 | 3 | 1 | 2 | 6 | 2 | 0 | 0 | 1 | 7 | 8 | 0 | 1 | 0 | 1 | 1 | **2.83%** |
| 8 | 1 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 1 | 2 | 7 | 2 | 3 | 1 | 0 | 2 | **2.05%** |
| 9 | 0 | 1 | 0 | 3 | 2 | 0 | 0 | 0 | 1 | 4 | 4 | 0 | 0 | 2 | 0 | 0 | **1.46%** |
| 10 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 2 | 1 | 0 | 0 | **1.03%** |
| 11 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | **0.68%** |
| 12 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **0.51%** |
| 13 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.17%** |
| 14 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.26%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | **0.17%** |
| 16 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.17%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | **0.17%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.17%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | 5.31% | 4.54% | 4.37% | 7.45% | 11.04% | 7.62% | 2.48% | 2.74% | 4.20% | 15.33% | 15.67% | 4.54% | 3.08% | 4.71% | 3.08% | 3.85% | |

# Table 2.7-31 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
15-20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | 3 | 1 | 9 | 17 | 3 | 0 | 3 | 1 | 11 | 15 | 2 | 2 | 1 | 1 | 3 | **49.03%** |
| 3 | 3 | 0 | 0 | 2 | 10 | 1 | 0 | 0 | 0 | 7 | 10 | 1 | 0 | 1 | 1 | 2 | **24.52%** |
| 4 | 1 | 2 | 0 | 1 | 6 | 1 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | **12.26%** |
| 5 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | **5.81%** |
| 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | **5.16%** |
| 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **1.94%** |
| 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.65%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 12 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.65%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **6.45%** | **5.81%** | **0.65%** | **8.39%** | **22.58%** | **3.87%** | **0.65%** | **1.94%** | **0.65%** | **12.90%** | **26.45%** | **1.94%** | **1.29%** | **1.29%** | **1.29%** | **3.87%** | |

# Table 2.7-32 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
>20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | **60.00%** |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | **20.00%** |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **10.00%** |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **10.00%** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **0.00%** | **0.00%** | **0.00%** | **10.00%** | **30.00%** | **0.00%** | **0.00%** | **0.00%** | **0.00%** | **0.00%** | **60.00%** | **0.00%** | **0.00%** | **0.00%** | **0.00%** | **0.00%** | |

# Table 2.7-33 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
All Wind Speeds

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 125 | 98 | 83 | 118 | 102 | 97 | 84 | 114 | 145 | 151 | 139 | 182 | 187 | 152 | 140 | 130 | **20.83%** |
| 3 | 89 | 57 | 65 | 81 | 83 | 79 | 81 | 93 | 105 | 107 | 101 | 110 | 113 | 119 | 87 | 88 | **14.84%** |
| 4 | 55 | 39 | 44 | 51 | 39 | 52 | 84 | 77 | 69 | 73 | 78 | 91 | 95 | 96 | 84 | 70 | **11.16%** |
| 5 | 46 | 35 | 30 | 35 | 31 | 53 | 56 | 58 | 47 | 53 | 58 | 61 | 62 | 66 | 51 | 49 | **8.05%** |
| 6 | 31 | 33 | 32 | 20 | 24 | 37 | 43 | 65 | 44 | 47 | 47 | 57 | 47 | 50 | 39 | 36 | **6.63%** |
| 7 | 27 | 18 | 23 | 26 | 19 | 43 | 31 | 34 | 40 | 39 | 41 | 27 | 35 | 41 | 38 | 30 | **5.21%** |
| 8 | 22 | 25 | 20 | 25 | 21 | 20 | 38 | 31 | 26 | 29 | 28 | 28 | 29 | 46 | 35 | 24 | **4.55%** |
| 9 | 18 | 15 | 11 | 9 | 15 | 20 | 34 | 29 | 13 | 26 | 32 | 32 | 34 | 31 | 24 | 19 | **3.68%** |
| 10 | 13 | 17 | 11 | 11 | 15 | 24 | 22 | 17 | 21 | 26 | 21 | 28 | 19 | 19 | 21 | 21 | **3.11%** |
| 11 | 18 | 9 | 14 | 9 | 10 | 13 | 23 | 17 | 26 | 20 | 22 | 26 | 22 | 26 | 14 | 8 | **2.82%** |
| 12 | 11 | 10 | 17 | 9 | 14 | 20 | 18 | 18 | 18 | 21 | 16 | 10 | 16 | 22 | 21 | 9 | **2.54%** |
| 13 | 4 | 6 | 7 | 6 | 8 | 16 | 13 | 15 | 16 | 19 | 9 | 19 | 15 | 14 | 13 | 16 | **1.99%** |
| 14 | 6 | 9 | 3 | 7 | 12 | 14 | 16 | 10 | 15 | 12 | 7 | 14 | 9 | 16 | 12 | 7 | **1.72%** |
| 15 | 9 | 7 | 9 | 5 | 4 | 15 | 11 | 4 | 6 | 9 | 27 | 13 | 11 | 10 | 10 | 7 | **1.60%** |
| 16 | 4 | 6 | 7 | 10 | 6 | 9 | 11 | 3 | 8 | 11 | 10 | 4 | 10 | 10 | 7 | 16 | **1.34%** |
| 17 | 1 | 5 | 4 | 3 | 6 | 10 | 7 | 5 | 8 | 11 | 14 | 8 | 5 | 7 | 9 | 5 | **1.10%** |
| 18 | 2 | 5 | 3 | 3 | 5 | 5 | 1 | 1 | 11 | 16 | 8 | 5 | 13 | 6 | 10 | 4 | **1.00%** |
| 19 | 2 | 3 | 5 | 3 | 1 | 6 | 4 | 2 | 10 | 8 | 7 | 4 | 8 | 4 | 4 | 5 | **0.77%** |
| 20 | 4 | 5 | 4 | 6 | 2 | 2 | 2 | 6 | 2 | 8 | 5 | 3 | 6 | 6 | 3 | 7 | **0.72%** |
| 21 | 4 | 4 | 4 | 1 | 2 | 1 | 1 | 0 | 3 | 8 | 2 | 8 | 7 | 3 | 4 | 8 | **0.61%** |
| 22 | 3 | 0 | 0 | 5 | 7 | 1 | 0 | 1 | 5 | 8 | 2 | 4 | 0 | 5 | 3 | 3 | **0.48%** |
| 23 | 5 | 2 | 0 | 1 | 3 | 0 | 1 | 1 | 2 | 8 | 5 | 6 | 1 | 3 | 5 | 1 | **0.45%** |
| 24 | 0 | 2 | 5 | 3 | 1 | 1 | 1 | 1 | 3 | 5 | 9 | 2 | 1 | 1 | 4 | 1 | **0.41%** |
| 25 | 0 | 1 | 2 | 3 | 3 | 1 | 3 | 0 | 1 | 7 | 4 | 5 | 1 | 1 | 4 | 2 | **0.39%** |
| 26 | 0 | 1 | 0 | 2 | 1 | 3 | 0 | 0 | 4 | 7 | 8 | 3 | 2 | 2 | 3 | 3 | **0.40%** |
| 27 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 3 | 5 | 7 | 5 | 6 | 1 | 3 | 5 | **0.43%** |
| 28 | 1 | 2 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 3 | 5 | 3 | 5 | 1 | 4 | 2 | **0.33%** |
| 29 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 6 | 4 | 4 | 3 | 2 | 5 | **0.31%** |
| 30 | 1 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 2 | 4 | 1 | 5 | 0 | 3 | 4 | 0 | **0.26%** |
| 31 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 6 | 1 | 0 | 2 | 1 | 1 | **0.17%** |
| 32 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 4 | 4 | 2 | 1 | 1 | 1 | **0.19%** |
| 33 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 7 | 2 | 0 | 2 | 2 | 0 | **0.20%** |
| 34 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 4 | 1 | 0 | 2 | 2 | 0 | **0.16%** |
| 35 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | **0.09%** |
| 36 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 3 | 2 | 2 | 0 | 0 | **0.15%** |
| 37 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 4 | 1 | 3 | 1 | 0 | **0.13%** |
| 38 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.08%** |
| 39 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 2 | 0 | **0.11%** |
| 40 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 2 | 1 | 0 | 0 | **0.10%** |
| 41 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | **0.06%** |
| 42 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | **0.07%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 44 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | **0.04%** |
| 45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | **0.08%** |
| 46 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 47 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.02%** |
| 48+ | 2 | 1 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 10 | 13 | 9 | 5 | 2 | 1 | 0 | **0.55%** |
| % of PERSISTENT DIRECTION | **5.16%** | **4.28%** | **4.27%** | **4.77%** | **4.61%** | **5.62%** | **6.00%** | **6.13%** | **6.74%** | **7.82%** | **7.83%** | **8.12%** | **7.93%** | **7.96%** | **6.83%** | **5.93%** | |
| AVE PERSISTENT HOURS | **6.34** | **7.20** | **7.91** | **7.31** | **7.80** | **7.38** | **6.94** | **5.96** | **7.23** | **8.98** | **9.82** | **8.19** | **7.30** | **7.33** | **7.74** | **7.05** | |

THE LONGEST PERSISTENT WIND WAS FROM THE WEST BY SOUTHWEST AND LASTED 158 HOURS

# Table 2.7-34 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
0-5 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 105 | 119 | 55 | 36 | 49 | 73 | 75 | 99 | 131 | 145 | 179 | 206 | 197 | 172 | 184 | 151 | **39.48%** |
| 3 | 53 | 48 | 32 | 17 | 21 | 28 | 25 | 41 | 55 | 67 | 95 | 119 | 126 | 131 | 96 | 88 | **20.82%** |
| 4 | 35 | 27 | 18 | 5 | 3 | 15 | 26 | 23 | 40 | 38 | 59 | 88 | 76 | 83 | 71 | 47 | **13.07%** |
| 5 | 19 | 23 | 8 | 3 | 4 | 9 | 6 | 14 | 12 | 17 | 47 | 60 | 49 | 54 | 59 | 36 | **8.39%** |
| 6 | 12 | 14 | 3 | 0 | 3 | 5 | 7 | 8 | 11 | 17 | 28 | 26 | 44 | 38 | 29 | 24 | **5.37%** |
| 7 | 12 | 6 | 0 | 1 | 3 | 0 | 3 | 2 | 9 | 10 | 16 | 23 | 22 | 26 | 25 | 13 | **3.42%** |
| 8 | 6 | 4 | 2 | 2 | 3 | 1 | 4 | 1 | 1 | 7 | 10 | 24 | 14 | 32 | 18 | 4 | **2.66%** |
| 9 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 2 | 3 | 12 | 19 | 17 | 25 | 13 | 6 | **2.08%** |
| 10 | 4 | 2 | 1 | 0 | 0 | 0 | 3 | 1 | 2 | 3 | 7 | 5 | 7 | 12 | 10 | 4 | **1.22%** |
| 11 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 4 | 12 | 6 | 16 | 7 | 2 | **1.10%** |
| 12 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 4 | 6 | 10 | 8 | 10 | 1 | **0.90%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 7 | 7 | 3 | 0 | **0.46%** |
| 14 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4 | 4 | 2 | 2 | 0 | **0.32%** |
| 15 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 3 | 0 | 1 | **0.24%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | **0.14%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | **0.08%** |
| 18 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | **0.06%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | **0.04%** |
| 20 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | **0.10%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | **0.04%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **0.02%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **5.05%** | **4.88%** | **2.40%** | **1.34%** | **1.76%** | **2.74%** | **3.02%** | **3.80%** | **5.29%** | **6.21%** | **9.31%** | **11.99%** | **11.77%** | **12.27%** | **10.61%** | **7.57%** | |

# Table 2.7-35 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
5-10 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 80 | 64 | 78 | 116 | 103 | 120 | 102 | 119 | 103 | 152 | 127 | 89 | 67 | 65 | 62 | 88 | **25.45%** |
| 3 | 61 | 47 | 54 | 65 | 89 | 70 | 96 | 76 | 82 | 95 | 88 | 59 | 62 | 53 | 44 | 61 | **18.27%** |
| 4 | 35 | 24 | 47 | 38 | 48 | 53 | 84 | 58 | 64 | 72 | 74 | 61 | 43 | 51 | 37 | 46 | **13.84%** |
| 5 | 22 | 12 | 32 | 26 | 23 | 56 | 46 | 55 | 41 | 54 | 54 | 37 | 36 | 42 | 28 | 30 | **9.85%** |
| 6 | 19 | 22 | 19 | 32 | 27 | 25 | 34 | 44 | 27 | 34 | 36 | 27 | 20 | 24 | 25 | 20 | **7.21%** |
| 7 | 12 | 9 | 26 | 21 | 17 | 23 | 28 | 26 | 24 | 37 | 34 | 19 | 28 | 27 | 21 | 21 | **6.18%** |
| 8 | 12 | 9 | 14 | 10 | 13 | 17 | 26 | 24 | 11 | 30 | 20 | 16 | 13 | 18 | 16 | 18 | **4.43%** |
| 9 | 5 | 6 | 8 | 5 | 11 | 7 | 25 | 9 | 19 | 17 | 19 | 17 | 17 | 8 | 14 | 10 | **3.27%** |
| 10 | 3 | 6 | 7 | 7 | 5 | 16 | 9 | 6 | 4 | 14 | 20 | 11 | 5 | 6 | 13 | 7 | **2.30%** |
| 11 | 5 | 5 | 10 | 5 | 4 | 7 | 16 | 11 | 5 | 17 | 11 | 14 | 7 | 6 | 9 | 8 | **2.32%** |
| 12 | 3 | 3 | 8 | 5 | 5 | 8 | 9 | 2 | 8 | 11 | 6 | 8 | 1 | 7 | 4 | 6 | **1.56%** |
| 13 | 3 | 0 | 4 | 6 | 1 | 6 | 5 | 6 | 8 | 9 | 5 | 5 | 5 | 2 | 3 | 3 | **1.18%** |
| 14 | 0 | 2 | 4 | 3 | 2 | 6 | 3 | 0 | 7 | 5 | 5 | 5 | 0 | 0 | 3 | 3 | **0.80%** |
| 15 | 0 | 1 | 3 | 2 | 0 | 6 | 3 | 0 | 2 | 2 | 4 | 3 | 1 | 2 | 1 | 0 | **0.50%** |
| 16 | 1 | 1 | 3 | 2 | 0 | 2 | 4 | 1 | 2 | 4 | 4 | 3 | 2 | 2 | 2 | 1 | **0.56%** |
| 17 | 0 | 1 | 2 | 1 | 3 | 4 | 1 | 1 | 3 | 3 | 2 | 1 | 4 | 3 | 2 | 0 | **0.51%** |
| 18 | 0 | 1 | 1 | 2 | 2 | 3 | 0 | 1 | 3 | 3 | 3 | 1 | 1 | 2 | 0 | 1 | **0.40%** |
| 19 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 3 | 1 | 0 | 2 | 0 | 0 | 1 | **0.20%** |
| 20 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 3 | 0 | 0 | 1 | 0 | **0.17%** |
| 21 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | **0.20%** |
| 22 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | **0.15%** |
| 23 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | **0.08%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.05%** |
| 25 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | **0.12%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | **0.10%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | **0.07%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | **0.05%** |
| 29 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | **0.07%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.05%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **4.34%** | **3.55%** | **5.42%** | **5.77%** | **5.87%** | **7.16%** | **8.22%** | **7.31%** | **7.01%** | **9.42%** | **8.62%** | **6.45%** | **5.34%** | **5.32%** | **4.79%** | **5.40%** | |

## Table 2.7-36 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
10-15 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 19 | 14 | 16 | 26 | 38 | 39 | 20 | 21 | 10 | 51 | 48 | 22 | 14 | 18 | 12 | 17 | **27.92%** |
| 3 | 14 | 12 | 13 | 17 | 31 | 26 | 6 | 8 | 17 | 45 | 43 | 16 | 9 | 12 | 8 | 12 | **20.96%** |
| 4 | 8 | 7 | 5 | 12 | 27 | 20 | 5 | 3 | 16 | 20 | 28 | 8 | 6 | 8 | 7 | 6 | **13.49%** |
| 5 | 5 | 8 | 6 | 9 | 17 | 10 | 3 | 5 | 5 | 29 | 17 | 7 | 8 | 5 | 5 | 7 | **10.59%** |
| 6 | 5 | 7 | 1 | 3 | 9 | 9 | 1 | 3 | 5 | 12 | 17 | 6 | 2 | 6 | 3 | 2 | **6.60%** |
| 7 | 2 | 2 | 0 | 4 | 10 | 6 | 2 | 1 | 4 | 10 | 12 | 3 | 1 | 1 | 3 | 3 | **4.64%** |
| 8 | 2 | 1 | 1 | 9 | 2 | 0 | 1 | 0 | 2 | 5 | 7 | 4 | 1 | 2 | 1 | 2 | **2.90%** |
| 9 | 0 | 2 | 2 | 1 | 3 | 2 | 0 | 0 | 1 | 6 | 10 | 3 | 1 | 4 | 1 | 1 | **2.68%** |
| 10 | 4 | 1 | 0 | 1 | 2 | 3 | 0 | 0 | 1 | 7 | 4 | 1 | 4 | 2 | 0 | 0 | **2.18%** |
| 11 | 1 | 1 | 0 | 4 | 2 | 0 | 0 | 0 | 1 | 4 | 0 | 2 | 2 | 0 | 0 | 0 | **1.23%** |
| 12 | 1 | 3 | 3 | 3 | 2 | 0 | 0 | 0 | 2 | 2 | 5 | 0 | 1 | 2 | 1 | 0 | **1.81%** |
| 13 | 1 | 2 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | **1.09%** |
| 14 | 1 | 2 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 1 | 1 | 0 | **1.16%** |
| 15 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **0.51%** |
| 16 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | **0.51%** |
| 17 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | **0.80%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | **0.15%** |
| 19 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.07%** |
| 20 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.15%** |
| 21 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | **0.36%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.07%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.07%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.07%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **4.71%** | **4.57%** | **4.21%** | **7.11%** | **10.80%** | **8.48%** | **2.83%** | **2.97%** | **4.79%** | **14.65%** | **14.36%** | **5.37%** | **3.84%** | **4.50%** | **3.12%** | **3.70%** | |

# Table 2.7-37 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
15-20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | 3 | 1 | 7 | 17 | 7 | 0 | 2 | 2 | 10 | 12 | 2 | 2 | 3 | 1 | 3 | **40.21%** |
| 3 | 2 | 0 | 0 | 2 | 12 | 3 | 0 | 1 | 0 | 5 | 11 | 2 | 1 | 1 | 1 | 2 | **22.75%** |
| 4 | 1 | 0 | 0 | 1 | 6 | 1 | 1 | 0 | 0 | 6 | 8 | 0 | 0 | 0 | 0 | 2 | **13.76%** |
| 5 | 3 | 4 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | **9.52%** |
| 6 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | **5.82%** |
| 7 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | **3.70%** |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | **1.06%** |
| 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **1.06%** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.53%** |
| 11 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.53%** |
| 12 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1.06%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **5.29%** | **5.82%** | **1.06%** | **8.47%** | **21.16%** | **6.35%** | **0.53%** | **1.59%** | **1.06%** | **14.29%** | **23.28%** | **2.65%** | **1.59%** | **2.12%** | **1.06%** | **3.70%** | |

# Table 2.7-38 Wind Direction Persistence Summaries - Fermi Site 10-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
>20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | **61.54%** |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | **15.38%** |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **7.69%** |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **7.69%** |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7.69%** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **0.00%** | **0.00%** | **0.00%** | **7.69%** | **23.08%** | **0.00%** | **0.00%** | **0.00%** | **0.00%** | **15.38%** | **46.15%** | **0.00%** | **7.69%** | **0.00%** | **0.00%** | **0.00%** | |

# Table 2.7-39 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
All Wind Speeds

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 145 | 146 | 179 | 199 | 193 | 199 | 202 | 213 | 234 | 263 | 304 | 279 | 291 | 297 | 226 | 195 | **40.38%** |
| 3 | 66 | 80 | 99 | 97 | 101 | 106 | 116 | 117 | 130 | 133 | 173 | 173 | 165 | 135 | 135 | 96 | **21.77%** |
| 4 | 37 | 39 | 59 | 63 | 40 | 50 | 49 | 59 | 71 | 121 | 87 | 89 | 106 | 93 | 60 | 56 | **12.22%** |
| 5 | 29 | 28 | 36 | 32 | 32 | 44 | 39 | 33 | 50 | 64 | 69 | 66 | 51 | 63 | 51 | 48 | **8.33%** |
| 6 | 6 | 12 | 20 | 22 | 24 | 34 | 26 | 12 | 19 | 40 | 46 | 42 | 33 | 39 | 24 | 25 | **4.80%** |
| 7 | 10 | 16 | 20 | 17 | 18 | 25 | 20 | 12 | 19 | 21 | 30 | 27 | 35 | 27 | 22 | 16 | **3.79%** |
| 8 | 11 | 7 | 13 | 10 | 18 | 14 | 7 | 4 | 9 | 26 | 26 | 29 | 19 | 19 | 16 | 13 | **2.73%** |
| 9 | 4 | 3 | 7 | 7 | 4 | 15 | 5 | 4 | 6 | 19 | 11 | 13 | 9 | 10 | 10 | 8 | **1.53%** |
| 10 | 1 | 3 | 8 | 3 | 7 | 4 | 3 | 6 | 2 | 16 | 12 | 15 | 5 | 10 | 6 | 3 | **1.18%** |
| 11 | 1 | 0 | 5 | 4 | 2 | 1 | 3 | 3 | 1 | 8 | 8 | 13 | 8 | 5 | 3 | 2 | **0.76%** |
| 12 | 3 | 1 | 2 | 3 | 7 | 2 | 1 | 1 | 1 | 9 | 5 | 5 | 2 | 3 | 3 | 6 | **0.61%** |
| 13 | 2 | 0 | 1 | 2 | 4 | 1 | 0 | 1 | 0 | 2 | 1 | 6 | 5 | 6 | 1 | 2 | **0.39%** |
| 14 | 1 | 0 | 2 | 1 | 1 | 3 | 2 | 0 | 1 | 3 | 3 | 2 | 1 | 4 | 1 | 2 | **0.31%** |
| 15 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 0 | 1 | 6 | 0 | 2 | 3 | 2 | 2 | 1 | **0.26%** |
| 16 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | **0.19%** |
| 17 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 4 | 2 | 1 | 2 | 1 | 2 | **0.18%** |
| 18 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | **0.09%** |
| 19 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 2 | 0 | 2 | 0 | **0.18%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | **0.06%** |
| 21 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | **0.07%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | **0.05%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **0.01%** |
| 24 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.02%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **0.02%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **0.01%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.01%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.01%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.01%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **3.58%** | **3.79%** | **5.22%** | **5.24%** | **5.20%** | **5.66%** | **5.36%** | **5.27%** | **6.17%** | **8.38%** | **8.93%** | **8.85%** | **8.39%** | **8.16%** | **6.39%** | **5.40%** | |
| AVE PERSISTENT HOURS | **3.51** | **3.39** | **4.06** | **3.66** | **4.06** | **3.86** | **3.47** | **3.27** | **3.41** | **4.29** | **4.03** | **4.45** | **3.87** | **3.95** | **3.77** | **3.86** | |

THE LONGEST PERSISTENT WIND WAS FROM THE WEST BY SOUTHWEST AND LASTED 41 HOURS

# Table 2.7-40 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
0-5 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 10 | 22 | 20 | 13 | 12 | 15 | 10 | 18 | 16 | 10 | 15 | 12 | 5 | 21 | 5 | 16 | **81.48%** |
| 3 | 2 | 1 | 3 | 3 | 2 | 3 | 1 | 6 | 2 | 1 | 1 | 1 | 0 | 1 | 4 | 3 | **12.59%** |
| 4 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | **1.85%** |
| 5 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | **2.22%** |
| 6 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1.11%** |
| 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.37%** |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 10 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.37%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **4.81%** | **8.52%** | **10.37%** | **6.67%** | **5.56%** | **7.04%** | **4.07%** | **8.89%** | **7.04%** | **4.81%** | **5.93%** | **4.81%** | **1.85%** | **8.89%** | **3.33%** | **7.41%** | |

# Table 2.7-41 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
5-10 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 61 | 54 | 110 | 89 | 87 | 104 | 135 | 118 | 108 | 105 | 97 | 83 | 107 | 102 | 94 | 106 | **62.42%** |
| 3 | 13 | 24 | 52 | 31 | 21 | 39 | 48 | 55 | 50 | 27 | 30 | 29 | 40 | 36 | 27 | 39 | **22.45%** |
| 4 | 5 | 9 | 20 | 14 | 4 | 21 | 18 | 22 | 21 | 17 | 12 | 10 | 6 | 18 | 11 | 9 | **8.68%** |
| 5 | 4 | 6 | 11 | 8 | 5 | 11 | 13 | 12 | 5 | 3 | 4 | 2 | 5 | 0 | 5 | 6 | **4.00%** |
| 6 | 1 | 0 | 5 | 1 | 0 | 2 | 8 | 3 | 1 | 2 | 1 | 2 | 0 | 0 | 1 | 2 | **1.16%** |
| 7 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 1 | 1 | 2 | 1 | 0 | 1 | 0 | 2 | 1 | **0.60%** |
| 8 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **0.12%** |
| 9 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | **0.32%** |
| 10 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.12%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | **0.08%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.04%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | 3.40% | 3.76% | 8.00% | 5.76% | 4.68% | 7.28% | 9.00% | 8.48% | 7.48% | 6.28% | 5.80% | 5.12% | 6.36% | 6.32% | 5.64% | 6.60% | |

## Table 2.7-42 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
10-15 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 75 | 58 | 93 | 92 | 95 | 99 | 98 | 77 | 104 | 159 | 172 | 185 | 160 | 180 | 142 | 117 | **52.02%** |
| 3 | 33 | 32 | 40 | 34 | 36 | 41 | 30 | 32 | 35 | 69 | 92 | 104 | 82 | 67 | 66 | 61 | **23.31%** |
| 4 | 18 | 9 | 22 | 21 | 13 | 14 | 22 | 12 | 19 | 37 | 32 | 52 | 45 | 34 | 34 | 22 | **11.08%** |
| 5 | 6 | 7 | 15 | 13 | 7 | 6 | 6 | 9 | 10 | 20 | 28 | 20 | 20 | 31 | 18 | 24 | **6.55%** |
| 6 | 2 | 1 | 10 | 7 | 2 | 8 | 6 | 3 | 11 | 11 | 8 | 14 | 13 | 7 | 5 | 5 | **3.08%** |
| 7 | 2 | 2 | 3 | 1 | 2 | 7 | 3 | 2 | 0 | 7 | 4 | 9 | 5 | 3 | 6 | 5 | **1.66%** |
| 8 | 2 | 2 | 6 | 2 | 1 | 1 | 1 | 1 | 0 | 7 | 4 | 5 | 1 | 5 | 3 | 6 | **1.28%** |
| 9 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 0 | **0.30%** |
| 10 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 1 | 2 | 0 | 1 | 1 | **0.30%** |
| 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | **0.16%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | **0.08%** |
| 13 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | **0.08%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.03%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | **0.05%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **3.77%** | **3.03%** | **5.24%** | **4.67%** | **4.26%** | **4.80%** | **4.53%** | **3.74%** | **4.91%** | **8.54%** | **9.44%** | **10.78%** | **9.06%** | **9.03%** | **7.59%** | **6.60%** | |

## Table 2.7-43 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
15-20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 33 | 30 | 31 | 44 | 67 | 55 | 36 | 31 | 45 | 117 | 116 | 96 | 81 | 70 | 61 | 32 | **49.68%** |
| 3 | 11 | 18 | 17 | 18 | 26 | 26 | 15 | 17 | 29 | 53 | 53 | 63 | 44 | 39 | 24 | 5 | **24.08%** |
| 4 | 5 | 7 | 10 | 15 | 14 | 14 | 5 | 2 | 9 | 29 | 18 | 30 | 22 | 15 | 10 | 8 | **11.20%** |
| 5 | 1 | 6 | 8 | 1 | 9 | 9 | 4 | 2 | 7 | 18 | 16 | 22 | 9 | 18 | 5 | 4 | **7.31%** |
| 6 | 1 | 1 | 2 | 0 | 3 | 4 | 1 | 2 | 4 | 5 | 5 | 8 | 11 | 3 | 5 | 4 | **3.10%** |
| 7 | 2 | 0 | 3 | 2 | 3 | 2 | 0 | 0 | 1 | 6 | 6 | 8 | 1 | 2 | 2 | 1 | **2.05%** |
| 8 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 4 | 1 | 3 | 1 | 2 | 1 | 1 | **1.00%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 3 | 3 | 0 | 2 | **0.63%** |
| 10 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 0 | 0 | 0 | **0.47%** |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **0.11%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.05%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.05%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | **0.11%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | **0.16%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **2.84%** | **3.31%** | **3.84%** | **4.26%** | **6.57%** | **5.84%** | **3.21%** | **2.89%** | **4.99%** | **12.46%** | **11.41%** | **12.51%** | **9.20%** | **7.99%** | **5.68%** | **3.00%** | |

# Table 2.7-44 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
>20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 7 | 7 | 9 | 14 | 37 | 20 | 9 | 9 | 16 | 47 | 48 | 36 | 34 | 33 | 14 | 10 | **49.86%** |
| 3 | 5 | 3 | 1 | 9 | 14 | 10 | 3 | 3 | 8 | 27 | 17 | 26 | 13 | 23 | 8 | 5 | **24.93%** |
| 4 | 2 | 2 | 2 | 2 | 9 | 1 | 3 | 0 | 6 | 12 | 11 | 5 | 10 | 3 | 6 | 5 | **11.25%** |
| 5 | 2 | 1 | 0 | 5 | 6 | 1 | 0 | 0 | 1 | 3 | 7 | 7 | 5 | 4 | 3 | 0 | **6.41%** |
| 6 | 1 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 3 | 5 | 2 | 1 | 0 | 2 | 1 | **2.71%** |
| 7 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 1 | **1.14%** |
| 8 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 2 | 0 | 3 | 1 | 1 | **1.99%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | **0.28%** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | **0.57%** |
| 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | **0.43%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.28%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.14%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **2.42%** | **1.85%** | **1.85%** | **4.56%** | **9.97%** | **4.84%** | **2.14%** | **1.71%** | **4.56%** | **13.82%** | **13.53%** | **11.97%** | **8.97%** | **9.54%** | **4.99%** | **3.28%** | |

# Table 2.7-45 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
All Wind Speeds

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 87 | 85 | 76 | 96 | 104 | 114 | 99 | 108 | 103 | 134 | 99 | 114 | 127 | 102 | 74 | 97 | **17.75%** |
| 3 | 59 | 54 | 59 | 83 | 73 | 75 | 86 | 89 | 94 | 90 | 77 | 106 | 82 | 68 | 73 | 70 | **13.58%** |
| 4 | 34 | 24 | 31 | 64 | 45 | 45 | 61 | 80 | 83 | 72 | 71 | 70 | 65 | 62 | 58 | 52 | **10.06%** |
| 5 | 39 | 39 | 40 | 43 | 33 | 43 | 47 | 57 | 59 | 67 | 59 | 60 | 50 | 65 | 40 | 38 | **8.54%** |
| 6 | 33 | 23 | 39 | 27 | 18 | 27 | 34 | 48 | 44 | 62 | 45 | 41 | 42 | 40 | 45 | 34 | **6.60%** |
| 7 | 24 | 25 | 23 | 26 | 27 | 30 | 26 | 33 | 37 | 37 | 43 | 40 | 41 | 29 | 38 | 30 | **5.58%** |
| 8 | 13 | 17 | 19 | 24 | 18 | 28 | 26 | 24 | 30 | 34 | 34 | 35 | 29 | 31 | 35 | 16 | **4.53%** |
| 9 | 13 | 16 | 24 | 14 | 25 | 34 | 24 | 32 | 21 | 22 | 22 | 23 | 26 | 28 | 25 | 19 | **4.04%** |
| 10 | 11 | 14 | 12 | 13 | 12 | 23 | 25 | 19 | 18 | 28 | 28 | 31 | 14 | 17 | 23 | 14 | **3.31%** |
| 11 | 21 | 12 | 20 | 18 | 17 | 10 | 18 | 16 | 21 | 19 | 20 | 17 | 25 | 18 | 15 | 9 | **3.03%** |
| 12 | 14 | 8 | 11 | 7 | 8 | 19 | 11 | 21 | 15 | 25 | 18 | 21 | 15 | 22 | 18 | 3 | **2.59%** |
| 13 | 10 | 6 | 13 | 12 | 13 | 11 | 11 | 11 | 19 | 16 | 12 | 26 | 17 | 16 | 11 | 15 | **2.40%** |
| 14 | 3 | 13 | 10 | 5 | 15 | 12 | 21 | 12 | 12 | 14 | 12 | 19 | 17 | 13 | 7 | 12 | **2.16%** |
| 15 | 4 | 4 | 3 | 6 | 8 | 7 | 13 | 9 | 8 | 11 | 16 | 11 | 9 | 13 | 11 | 12 | **1.59%** |
| 16 | 0 | 6 | 10 | 8 | 4 | 13 | 9 | 6 | 9 | 11 | 11 | 11 | 6 | 9 | 5 | 12 | **1.43%** |
| 17 | 3 | 9 | 5 | 9 | 8 | 10 | 5 | 6 | 5 | 12 | 6 | 10 | 12 | 14 | 11 | 3 | **1.40%** |
| 18 | 5 | 6 | 8 | 4 | 3 | 6 | 5 | 4 | 12 | 10 | 10 | 10 | 15 | 9 | 10 | 6 | **1.35%** |
| 19 | 0 | 5 | 3 | 8 | 3 | 4 | 3 | 2 | 9 | 7 | 6 | 4 | 8 | 9 | 6 | 11 | **0.97%** |
| 20 | 1 | 3 | 4 | 7 | 3 | 2 | 6 | 2 | 3 | 3 | 7 | 8 | 10 | 7 | 5 | 7 | **0.86%** |
| 21 | 1 | 3 | 2 | 1 | 6 | 2 | 3 | 2 | 3 | 8 | 8 | 9 | 10 | 1 | 4 | 5 | **0.75%** |
| 22 | 1 | 3 | 3 | 3 | 10 | 2 | 0 | 2 | 4 | 6 | 10 | 6 | 3 | 8 | 5 | 1 | **0.73%** |
| 23 | 0 | 2 | 0 | 2 | 4 | 1 | 1 | 2 | 5 | 11 | 4 | 6 | 7 | 3 | 4 | 5 | **0.63%** |
| 24 | 2 | 1 | 4 | 1 | 4 | 2 | 2 | 1 | 5 | 5 | 8 | 3 | 1 | 5 | 3 | 1 | **0.53%** |
| 25 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 3 | 6 | 3 | 9 | 2 | 4 | 3 | **0.44%** |
| 26 | 3 | 1 | 2 | 2 | 2 | 1 | 0 | 2 | 5 | 6 | 4 | 8 | 4 | 5 | 7 | 3 | **0.60%** |
| 27 | 0 | 1 | 2 | 1 | 3 | 1 | 0 | 1 | 0 | 1 | 6 | 5 | 7 | 4 | 7 | 3 | **0.46%** |
| 28 | 0 | 1 | 2 | 1 | 3 | 4 | 3 | 1 | 1 | 4 | 2 | 5 | 6 | 3 | 3 | 1 | **0.44%** |
| 29 | 0 | 2 | 3 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 4 | 2 | 2 | **0.27%** |
| 30 | 2 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 5 | 4 | 2 | 4 | 1 | **0.29%** |
| 31 | 1 | 0 | 1 | 3 | 3 | 0 | 0 | 1 | 0 | 2 | 5 | 2 | 3 | 3 | 2 | 1 | **0.30%** |
| 32 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 2 | 2 | 6 | 1 | 7 | 5 | 1 | 0 | **0.34%** |
| 33 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 3 | 3 | 4 | 2 | 6 | 2 | 0 | **0.26%** |
| 34 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 6 | 3 | 1 | 2 | 1 | 0 | **0.22%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | **0.07%** |
| 36 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 1 | 2 | 3 | 1 | **0.16%** |
| 37 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 3 | 2 | 2 | 0 | 0 | **0.13%** |
| 38 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | **0.13%** |
| 39 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | **0.15%** |
| 40 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | **0.14%** |
| 41 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | **0.09%** |
| 42 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 1 | **0.07%** |
| 43 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | **0.09%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **0.04%** |
| 45 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 1 | 0 | **0.08%** |
| 46 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | **0.04%** |
| 47 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | **0.04%** |
| 48+ | 3 | 2 | 5 | 4 | 3 | 0 | 1 | 0 | 1 | 7 | 15 | 12 | 11 | 3 | 2 | 0 | **0.76%** |
| % of PERSISTENT DIRECTION | **4.27%** | **4.28%** | **4.90%** | **5.58%** | **5.35%** | **5.91%** | **5.93%** | **6.49%** | **7.01%** | **8.16%** | **7.65%** | **8.21%** | **7.64%** | **7.03%** | **6.21%** | **5.37%** | |
| AVE PERSISTENT HOURS | **6.80** | **7.76** | **8.82** | **8.08** | **8.53** | **7.64** | **6.92** | **6.45** | **7.66** | **8.64** | **10.41** | **9.81** | **9.77** | **9.53** | **8.99** | **7.83** | |

THE LONGEST PERSISTENT WIND WAS FROM THE WEST BY SOUTHWEST AND LASTED 158 HOURS

# Table 2.7-46 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
0-5 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 20 | 26 | 25 | 23 | 20 | 23 | 18 | 28 | 24 | 14 | 21 | 25 | 20 | 25 | 15 | 25 | **65.31%** |
| 3 | 7 | 12 | 12 | 5 | 3 | 6 | 6 | 7 | 9 | 5 | 7 | 4 | 4 | 5 | 10 | 10 | **20.78%** |
| 4 | 2 | 2 | 2 | 0 | 2 | 0 | 6 | 3 | 1 | 1 | 2 | 1 | 0 | 2 | 1 | 4 | **5.38%** |
| 5 | 1 | 2 | 3 | 2 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 3 | 2 | 0 | **4.45%** |
| 6 | 0 | 0 | 2 | 3 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | **2.23%** |
| 7 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **1.11%** |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **0.19%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 10 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.37%** |
| 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.19%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **5.57%** | **8.16%** | **8.72%** | **6.31%** | **4.82%** | **6.12%** | **6.12%** | **7.42%** | **6.49%** | **4.27%** | **5.94%** | **5.75%** | **4.82%** | **6.68%** | **5.57%** | **7.24%** | |

# Table 2.7-47 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
5-10 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 61 | 89 | 94 | 101 | 98 | 111 | 112 | 123 | 99 | 136 | 99 | 107 | 127 | 107 | 110 | 101 | **43.84%** |
| 3 | 37 | 45 | 72 | 51 | 51 | 53 | 80 | 65 | 77 | 55 | 68 | 49 | 55 | 57 | 49 | 65 | **24.31%** |
| 4 | 19 | 23 | 32 | 30 | 21 | 41 | 31 | 49 | 54 | 29 | 23 | 29 | 23 | 23 | 33 | 23 | **12.64%** |
| 5 | 9 | 13 | 30 | 16 | 23 | 21 | 21 | 23 | 18 | 19 | 18 | 23 | 14 | 14 | 18 | 14 | **7.69%** |
| 6 | 7 | 8 | 15 | 6 | 5 | 12 | 29 | 20 | 4 | 5 | 10 | 10 | 5 | 11 | 7 | 9 | **4.27%** |
| 7 | 0 | 1 | 6 | 6 | 2 | 12 | 10 | 10 | 10 | 5 | 4 | 3 | 7 | 9 | 5 | 6 | **2.51%** |
| 8 | 1 | 4 | 5 | 6 | 3 | 3 | 7 | 7 | 5 | 2 | 4 | 2 | 4 | 4 | 3 | 3 | **1.65%** |
| 9 | 2 | 1 | 3 | 2 | 0 | 5 | 5 | 4 | 1 | 1 | 1 | 2 | 2 | 1 | 3 | 2 | **0.92%** |
| 10 | 1 | 0 | 1 | 6 | 1 | 3 | 4 | 6 | 1 | 2 | 0 | 0 | 2 | 3 | 2 | 2 | **0.89%** |
| 11 | 0 | 1 | 3 | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 3 | **0.47%** |
| 12 | 0 | 1 | 2 | 0 | 0 | 2 | 5 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | **0.42%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | **0.16%** |
| 14 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.08%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **0.03%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **0.05%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 18 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.05%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.03%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | 3.59% | 4.89% | 6.94% | 5.86% | 5.37% | 6.96% | 8.09% | 8.11% | 7.17% | 6.67% | 5.94% | 5.94% | 6.36% | 6.07% | 6.07% | 5.97% | |

# Table 2.7-48 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
10-15 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 44 | 51 | 80 | 92 | 90 | 91 | 79 | 78 | 99 | 146 | 150 | 154 | 147 | 140 | 112 | 99 | **35.80%** |
| 3 | 34 | 33 | 50 | 48 | 54 | 70 | 44 | 48 | 44 | 81 | 92 | 115 | 87 | 73 | 67 | 52 | **21.50%** |
| 4 | 22 | 22 | 31 | 34 | 29 | 24 | 33 | 25 | 45 | 47 | 63 | 67 | 56 | 63 | 41 | 33 | **13.76%** |
| 5 | 17 | 15 | 22 | 22 | 11 | 15 | 19 | 20 | 17 | 32 | 42 | 45 | 43 | 52 | 40 | 33 | **9.64%** |
| 6 | 10 | 6 | 14 | 8 | 8 | 10 | 11 | 11 | 17 | 25 | 22 | 25 | 30 | 28 | 32 | 16 | **5.92%** |
| 7 | 5 | 5 | 14 | 5 | 5 | 7 | 6 | 5 | 7 | 10 | 13 | 26 | 19 | 18 | 19 | 11 | **3.79%** |
| 8 | 7 | 2 | 6 | 6 | 3 | 5 | 6 | 5 | 7 | 15 | 15 | 17 | 10 | 16 | 10 | 12 | **3.08%** |
| 9 | 3 | 7 | 2 | 3 | 2 | 3 | 1 | 1 | 2 | 9 | 2 | 10 | 9 | 7 | 9 | 9 | **1.71%** |
| 10 | 0 | 0 | 4 | 3 | 1 | 2 | 2 | 2 | 5 | 6 | 18 | 9 | 11 | 11 | 4 | 6 | **1.82%** |
| 11 | 2 | 1 | 5 | 2 | 2 | 1 | 0 | 2 | 1 | 5 | 3 | 2 | 7 | 6 | 2 | 0 | **0.89%** |
| 12 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 1 | 3 | 3 | 1 | 3 | 4 | 2 | 2 | 5 | **0.63%** |
| 13 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 2 | 3 | 3 | 2 | **0.46%** |
| 14 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 2 | **0.17%** |
| 15 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | **0.15%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | **0.13%** |
| 17 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | **0.20%** |
| 18 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | **0.09%** |
| 19 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | **0.09%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **0.02%** |
| 21 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.07%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | **0.07%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.02%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.02%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **3.16%** | **3.12%** | **5.05%** | **4.90%** | **4.46%** | **5.01%** | **4.38%** | **4.29%** | **5.46%** | **8.34%** | **9.38%** | **10.44%** | **9.27%** | **9.10%** | **7.52%** | **6.11%** | |

## Table 2.7-49 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
15-20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 23 | 27 | 37 | 34 | 69 | 53 | 31 | 31 | 51 | 106 | 100 | 96 | 80 | 67 | 53 | 33 | **39.16%** |
| 3 | 15 | 16 | 20 | 32 | 30 | 28 | 21 | 22 | 26 | 62 | 53 | 57 | 50 | 42 | 27 | 9 | **22.42%** |
| 4 | 7 | 6 | 10 | 16 | 22 | 21 | 13 | 6 | 18 | 36 | 33 | 40 | 27 | 24 | 18 | 14 | **13.67%** |
| 5 | 3 | 7 | 9 | 5 | 14 | 14 | 7 | 4 | 12 | 26 | 26 | 19 | 16 | 19 | 9 | 9 | **8.75%** |
| 6 | 3 | 9 | 4 | 4 | 6 | 7 | 2 | 4 | 6 | 16 | 13 | 16 | 11 | 10 | 7 | 6 | **5.45%** |
| 7 | 3 | 2 | 3 | 6 | 4 | 5 | 0 | 0 | 5 | 11 | 11 | 12 | 10 | 2 | 6 | 0 | **3.52%** |
| 8 | 1 | 3 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 5 | 7 | 6 | 6 | 4 | 3 | 2 | **2.11%** |
| 9 | 5 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 1 | 2 | 3 | 4 | 3 | 1 | 2 | **1.23%** |
| 10 | 1 | 0 | 2 | 0 | 4 | 0 | 1 | 0 | 2 | 5 | 3 | 5 | 4 | 2 | 0 | 0 | **1.27%** |
| 11 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3 | 1 | 4 | 0 | 2 | 1 | 0 | **0.62%** |
| 12 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 1 | 2 | 1 | 0 | 0 | **0.48%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | **0.22%** |
| 14 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | **0.31%** |
| 15 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 1 | **0.31%** |
| 16 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | **0.22%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | **0.13%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.09%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.04%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **2.77%** | **3.16%** | **3.87%** | **4.35%** | **6.77%** | **5.80%** | **3.34%** | **3.08%** | **5.63%** | **12.13%** | **11.30%** | **11.82%** | **9.41%** | **7.74%** | **5.49%** | **3.34%** | |

# Table 2.7-50 Wind Direction Persistence Summaries - Fermi Site 60-Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
>20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5 | 8 | 8 | 15 | 34 | 20 | 7 | 10 | 21 | 48 | 43 | 34 | 36 | 33 | 18 | 8 | **41.28%** |
| 3 | 5 | 3 | 2 | 9 | 17 | 16 | 3 | 3 | 8 | 32 | 28 | 29 | 25 | 27 | 8 | 5 | **26.10%** |
| 4 | 2 | 2 | 2 | 4 | 17 | 4 | 6 | 1 | 3 | 15 | 13 | 10 | 15 | 4 | 7 | 4 | **12.93%** |
| 5 | 3 | 1 | 0 | 5 | 8 | 2 | 0 | 2 | 3 | 6 | 16 | 6 | 5 | 5 | 3 | 3 | **8.07%** |
| 6 | 1 | 1 | 1 | 2 | 3 | 1 | 0 | 0 | 4 | 5 | 4 | 7 | 3 | 0 | 2 | 1 | **4.15%** |
| 7 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 1 | 3 | 4 | 0 | 1 | 1 | 2 | **2.14%** |
| 8 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 4 | 2 | 3 | 0 | 1 | 2 | 2 | **2.14%** |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | **0.59%** |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 1 | 0 | **0.71%** |
| 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | **0.47%** |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | **0.47%** |
| 13 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.36%** |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **0.24%** |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **0.12%** |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0.12%** |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **0.12%** |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.00%** |
| % of PERSISTENT DIRECTION | **2.02%** | **1.78%** | **1.66%** | **4.39%** | **9.73%** | **5.22%** | **2.02%** | **2.02%** | **5.22%** | **13.64%** | **13.64%** | **11.63%** | **10.20%** | **8.78%** | **4.98%** | **3.08%** | |

# Table 2.7-51 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
All Wind Speeds (A)

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 275 | 210 | 169 | 162 | 254 | 105 | 155 | 190 | 372 | 360 | 353 | 329 | 331 | 352 | 241 | 235 | 51.26% |
| 3 | 146 | 111 | 55 | 75 | 93 | 26 | 44 | 93 | 206 | 138 | 154 | 139 | 179 | 129 | 117 | 94 | 22.53% |
| 4 | 81 | 61 | 23 | 20 | 56 | 13 | 29 | 48 | 107 | 66 | 89 | 61 | 107 | 74 | 31 | 32 | 11.25% |
| 5 | 30 | 39 | 21 | 18 | 37 | 5 | 10 | 18 | 59 | 34 | 31 | 52 | 43 | 19 | 21 | 27 | 5.81% |
| 6 | 26 | 16 | 6 | 8 | 27 | 0 | 6 | 4 | 27 | 26 | 24 | 15 | 35 | 19 | 10 | 5 | 3.18% |
| 7 | 15 | 12 | 5 | 4 | 15 | 0 | 1 | 1 | 25 | 14 | 19 | 9 | 12 | 14 | 8 | 4 | 1.98% |
| 8 | 9 | 7 | 2 | 2 | 10 | 0 | 0 | 2 | 4 | 13 | 7 | 7 | 14 | 11 | 2 | 1 | 1.14% |
| 9 | 13 | 6 | 1 | 0 | 4 | 0 | 0 | 0 | 8 | 10 | 14 | 5 | 5 | 2 | 0 | 4 | 0.90% |
| 10 | 4 | 1 | 3 | 1 | 1 | 2 | 2 | 0 | 0 | 3 | 3 | 2 | 9 | 0 | 1 | 4 | 0.45% |
| 11 | 5 | 2 | 0 | 1 | 1 | 2 | 0 | 0 | 6 | 2 | 3 | 1 | 5 | 1 | 2 | 0 | 0.39% |
| 12 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 4 | 4 | 3 | 0 | 0 | 0.38% |
| 13 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 3 | 0 | 1 | 0 | 0.19% |
| 14 | 2 | 4 | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0.16% |
| 15 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0.11% |
| 16 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0.09% |
| 17 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.09% |
| 18 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 19 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01% |
| 21 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 7.79% | 5.95% | 3.61% | 3.64% | 6.36% | 1.92% | 3.09% | 4.46% | 10.37% | 8.38% | 8.82% | 7.84% | 9.39% | 7.81% | 5.46% | 5.11% | |
| AVE PERSISTENT HOURS | 3.67 | 3.52 | 3.00 | 2.86 | 3.44 | 2.66 | 2.72 | 2.78 | 3.37 | 3.15 | 3.25 | 3.10 | 3.42 | 2.96 | 2.92 | 2.91 | |

* THE LONGEST PERSISTENT WIND WAS FROM THE SOUTH BY SOUTHWEST AND LASTED 24 HOURS
(A) Hourly wind speeds of 3 knots or less (3.45) are reported as calm hours.
Source: Reference 2.7-41

# Table 2.7-52 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
0-5 MPH (A)

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 51 | 45 | 24 | 36 | 87 | 22 | 25 | 39 | 104 | 33 | 3 | 10 | 33 | 31 | 19 | 26 | 78.82% |
| 3 | 24 | 16 | 2 | 7 | 13 | 4 | 2 | 3 | 29 | 4 | 2 | 0 | 5 | 3 | 3 | 2 | 15.95% |
| 4 | 0 | 2 | 0 | 1 | 7 | 0 | 3 | 1 | 7 | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 3.49% |
| 5 | 0 | 3 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1.34% |
| 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.40% |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 10.05% | 8.85% | 3.49% | 6.03% | 14.75% | 3.49% | 4.02% | 5.76% | 19.30% | 5.36% | 0.67% | 1.47% | 5.09% | 4.69% | 2.95% | 4.02% | |

(A) Hourly wind speeds of 3 knots or less (3.45) are reported as calm hours.
Source: Reference 2.7-41

# Table 2.7-53 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
5-10 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 175 | 138 | 87 | 75 | 179 | 46 | 78 | 118 | 230 | 153 | 83 | 103 | 160 | 139 | 99 | 121 | 66.27% |
| 3 | 74 | 42 | 31 | 25 | 53 | 9 | 22 | 31 | 77 | 46 | 26 | 24 | 65 | 35 | 30 | 25 | 20.54% |
| 4 | 19 | 27 | 4 | 6 | 23 | 3 | 11 | 16 | 34 | 21 | 4 | 12 | 16 | 11 | 3 | 6 | 7.21% |
| 5 | 9 | 8 | 4 | 3 | 17 | 5 | 3 | 2 | 10 | 5 | 3 | 5 | 11 | 3 | 0 | 4 | 3.07% |
| 6 | 7 | 6 | 2 | 2 | 4 | 0 | 2 | 1 | 8 | 3 | 0 | 2 | 2 | 3 | 2 | 0 | 1.47% |
| 7 | 4 | 6 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.53% |
| 8 | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0.27% |
| 9 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.27% |
| 10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 11 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0.23% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 16 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 9.79% | 7.75% | 4.31% | 3.74% | 9.45% | 2.10% | 3.87% | 5.61% | 12.22% | 7.68% | 3.87% | 4.91% | 8.48% | 6.51% | 4.48% | 5.21% | |

Source: Reference 2.7-41

## Table 2.7-54 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
10-15 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 88 | 56 | 48 | 43 | 33 | 8 | 26 | 47 | 121 | 127 | 174 | 137 | 134 | 132 | 103 | 80 | 60.99% |
| 3 | 29 | 27 | 19 | 15 | 23 | 4 | 6 | 11 | 52 | 45 | 60 | 36 | 55 | 42 | 24 | 24 | 21.21% |
| 4 | 20 | 13 | 2 | 7 | 7 | 4 | 2 | 8 | 20 | 30 | 21 | 20 | 26 | 11 | 9 | 11 | 9.48% |
| 5 | 8 | 8 | 5 | 6 | 10 | 0 | 2 | 0 | 6 | 8 | 15 | 14 | 6 | 5 | 8 | 7 | 4.85% |
| 6 | 4 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 5 | 7 | 7 | 2 | 7 | 1 | 2 | 1 | 1.80% |
| 7 | 0 | 4 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 0.63% |
| 8 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0.45% |
| 9 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.31% |
| 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.04% |
| 11 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.04% |
| 12 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.09% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.09% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 7.06% | 4.99% | 3.60% | 3.19% | 3.42% | 0.81% | 1.62% | 2.97% | 9.26% | 9.89% | 12.54% | 9.53% | 10.38% | 8.67% | 6.56% | 5.53% | |

Source: Reference 2.7-41

## Table 2.7-55 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
15-20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 16 | 18 | 2 | 6 | 3 | 0 | 5 | 3 | 24 | 41 | 82 | 55 | 65 | 44 | 29 | 20 | 65.97% |
| 3 | 12 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 11 | 3 | 25 | 13 | 31 | 7 | 5 | 7 | 19.17% |
| 4 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 17 | 9 | 3 | 0 | 5 | 1 | 9.11% |
| 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 8 | 5 | 4 | 1 | 1 | 4 | 4.47% |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0.80% |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0.32% |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.16% |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 5.75% | 3.83% | 0.64% | 0.96% | 0.48% | 0.00% | 0.80% | 0.48% | 6.87% | 8.79% | 21.41% | 13.58% | 16.61% | 8.31% | 6.39% | 5.11% | |

Source: Reference 2.7-41

## Table 2.7-56 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 22.5° Direction
2003-2007
>20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 10 | 25 | 9 | 26 | 9 | 9 | 7 | 69.48% |
| 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 10 | 9 | 3 | 2 | 3 | 0 | 22.73% |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 2 | 1 | 0 | 0 | 0 | 6.49% |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.65% |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.65% |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 4.55% | 1.30% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 6.49% | 9.09% | 26.62% | 12.99% | 19.48% | 7.14% | 7.79% | 4.55% | |

Source: Reference 2.7-41

# Table 2.7-57 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
All Wind Speeds [(A)]

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 156 | 107 | 110 | 86 | 166 | 107 | 160 | 164 | 240 | 175 | 133 | 161 | 204 | 136 | 145 | 126 | 24.23% |
| 3 | 99 | 75 | 79 | 104 | 103 | 44 | 78 | 91 | 197 | 128 | 125 | 119 | 111 | 94 | 106 | 78 | 16.63% |
| 4 | 61 | 43 | 41 | 49 | 43 | 41 | 54 | 89 | 125 | 84 | 58 | 75 | 96 | 66 | 65 | 49 | 10.59% |
| 5 | 42 | 40 | 44 | 45 | 50 | 26 | 33 | 66 | 90 | 51 | 57 | 81 | 77 | 62 | 60 | 41 | 8.82% |
| 6 | 49 | 19 | 28 | 31 | 25 | 18 | 35 | 57 | 54 | 48 | 46 | 59 | 58 | 54 | 24 | 38 | 6.56% |
| 7 | 32 | 24 | 22 | 24 | 15 | 16 | 13 | 30 | 64 | 38 | 44 | 46 | 37 | 51 | 47 | 27 | 5.40% |
| 8 | 33 | 22 | 14 | 13 | 30 | 16 | 12 | 40 | 40 | 36 | 40 | 35 | 36 | 46 | 29 | 21 | 4.72% |
| 9 | 27 | 13 | 16 | 14 | 16 | 12 | 8 | 21 | 38 | 26 | 38 | 25 | 30 | 22 | 22 | 25 | 3.60% |
| 10 | 29 | 13 | 14 | 12 | 7 | 9 | 8 | 13 | 19 | 26 | 24 | 31 | 23 | 33 | 23 | 18 | 3.08% |
| 11 | 14 | 16 | 7 | 6 | 14 | 4 | 8 | 10 | 26 | 24 | 18 | 12 | 24 | 19 | 15 | 5 | 2.26% |
| 12 | 7 | 13 | 11 | 6 | 8 | 1 | 5 | 12 | 17 | 17 | 9 | 15 | 22 | 13 | 13 | 23 | 1.96% |
| 13 | 12 | 3 | 11 | 7 | 8 | 1 | 3 | 12 | 11 | 16 | 20 | 5 | 20 | 6 | 19 | 3 | 1.60% |
| 14 | 12 | 22 | 4 | 1 | 3 | 4 | 0 | 3 | 7 | 13 | 6 | 16 | 16 | 12 | 4 | 4 | 1.29% |
| 15 | 6 | 10 | 4 | 2 | 3 | 6 | 2 | 6 | 14 | 7 | 13 | 11 | 16 | 6 | 6 | 6 | 1.20% |
| 16 | 8 | 8 | 2 | 7 | 7 | 4 | 3 | 4 | 9 | 7 | 12 | 10 | 15 | 10 | 5 | 3 | 1.16% |
| 17 | 2 | 4 | 4 | 3 | 3 | 1 | 0 | 2 | 11 | 7 | 3 | 5 | 12 | 9 | 1 | 5 | 0.73% |
| 18 | 9 | 14 | 5 | 1 | 4 | 0 | 1 | 2 | 5 | 12 | 14 | 4 | 6 | 5 | 5 | 8 | 0.97% |
| 19 | 6 | 2 | 2 | 5 | 3 | 1 | 2 | 2 | 4 | 10 | 3 | 3 | 5 | 8 | 1 | 1 | 0.59% |
| 20 | 5 | 8 | 3 | 4 | 3 | 0 | 0 | 3 | 5 | 4 | 3 | 8 | 8 | 9 | 1 | 2 | 0.67% |
| 21 | 3 | 4 | 1 | 0 | 3 | 0 | 0 | 3 | 4 | 10 | 8 | 4 | 0 | 2 | 1 | 2 | 0.46% |
| 22 | 3 | 2 | 1 | 1 | 2 | 0 | 0 | 1 | 2 | 2 | 2 | 3 | 2 | 1 | 3 | 6 | 0.32% |
| 23 | 4 | 2 | 1 | 4 | 2 | 0 | 0 | 2 | 0 | 4 | 6 | 1 | 3 | 2 | 4 | 2 | 0.38% |
| 24 | 2 | 1 | 3 | 2 | 4 | 1 | 0 | 0 | 3 | 5 | 4 | 5 | 0 | 1 | 2 | 3 | 0.37% |
| 25 | 0 | 3 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 3 | 4 | 3 | 3 | 2 | 2 | 3 | 0.29% |
| 26 | 3 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | 0 | 1 | 2 | 0.18% |
| 27 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0.11% |
| 28 | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 3 | 2 | 4 | 0 | 1 | 0.28% |
| 29 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 2 | 5 | 0 | 1 | 2 | 2 | 0 | 0.20% |
| 30 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 2 | 2 | 0 | 0 | 0.11% |
| 31 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 0 | 0.11% |
| 32 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0.06% |
| 33 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 2 | 0 | 2 | 0.14% |
| 34 | 3 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0.12% |
| 35 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 0.11% |
| 36 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0.08% |
| 37 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 2 | 0 | 0.11% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 1 | 0 | 1 | 0.07% |
| 39 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 0.06% |
| 40 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02% |
| 41 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0.04% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0.02% |
| 43 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0.03% |
| 44 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.03% |
| 45 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0.05% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 1 | 3 | 1 | 0 | 0.16% |
| % of PERSISTENT DIRECTION | 6.50% | 5.04% | 4.44% | 4.48% | 5.39% | 3.21% | 4.33% | 6.47% | 10.14% | 7.93% | 7.31% | 7.74% | 8.55% | 7.04% | 6.23% | 5.19% | |
| AVE PERSISTENT HOURS | 6.86 | 8.38 | 6.22 | 6.32 | 5.72 | 5.20 | 4.25 | 5.44 | 5.73 | 7.41 | 7.77 | 6.97 | 6.75 | 7.29 | 6.20 | 6.71 | |

* THE LONGEST PERSISTENT WIND WAS FROM THE SOUTHWEST AND LASTED 67 HOURS
[(A)]Hourly wind speeds of 3 knots or less (3.45) are reported as calm hours.
Source: Reference 2.7-41

# Table 2.7-58 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
0-5 MPH [(A)]

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 84 | 64 | 42 | 58 | 122 | 50 | 53 | 83 | 147 | 60 | 14 | 22 | 49 | 59 | 41 | 47 | 63.05% |
| 3 | 34 | 32 | 23 | 33 | 43 | 15 | 19 | 22 | 61 | 22 | 4 | 6 | 15 | 17 | 14 | 18 | 23.95% |
| 4 | 15 | 8 | 3 | 6 | 15 | 6 | 7 | 9 | 26 | 7 | 1 | 2 | 11 | 3 | 1 | 9 | 8.17% |
| 5 | 5 | 2 | 2 | 6 | 6 | 2 | 2 | 5 | 4 | 3 | 0 | 2 | 1 | 3 | 0 | 0 | 2.72% |
| 6 | 0 | 3 | 3 | 2 | 2 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1.33% |
| 7 | 1 | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.57% |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.13% |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06% |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 8.81% | 6.97% | 4.69% | 6.78% | 12.04% | 4.88% | 5.26% | 7.54% | 15.27% | 5.96% | 1.20% | 2.03% | 4.88% | 5.26% | 3.55% | 4.88% | |

[(A)]Hourly wind speeds of 3 knots or less (3.45) are reported as calm hours.
Source: Reference 2.7-41

# Table 2.7-59 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
5-10 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 161 | 127 | 116 | 98 | 164 | 75 | 126 | 148 | 263 | 168 | 128 | 150 | 207 | 155 | 122 | 133 | 45.77% |
| 3 | 100 | 73 | 52 | 53 | 88 | 24 | 48 | 95 | 130 | 94 | 60 | 80 | 86 | 90 | 58 | 52 | 23.13% |
| 4 | 42 | 59 | 22 | 28 | 34 | 26 | 27 | 45 | 64 | 52 | 28 | 37 | 45 | 52 | 34 | 46 | 12.53% |
| 5 | 28 | 22 | 11 | 16 | 28 | 15 | 15 | 27 | 32 | 25 | 11 | 25 | 30 | 31 | 18 | 15 | 6.82% |
| 6 | 27 | 15 | 7 | 13 | 5 | 7 | 11 | 15 | 27 | 23 | 14 | 12 | 28 | 19 | 10 | 8 | 4.71% |
| 7 | 16 | 16 | 10 | 9 | 9 | 4 | 3 | 8 | 17 | 8 | 6 | 3 | 11 | 4 | 12 | 10 | 2.85% |
| 8 | 4 | 10 | 8 | 7 | 5 | 2 | 2 | 6 | 6 | 8 | 2 | 3 | 2 | 6 | 3 | 4 | 1.52% |
| 9 | 2 | 5 | 2 | 3 | 1 | 3 | 2 | 4 | 6 | 4 | 1 | 0 | 2 | 3 | 0 | 1 | 0.76% |
| 10 | 4 | 9 | 1 | 0 | 6 | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 2 | 3 | 0 | 2 | 0.65% |
| 11 | 4 | 2 | 3 | 0 | 2 | 0 | 0 | 0 | 5 | 1 | 1 | 1 | 0 | 3 | 0 | 0 | 0.43% |
| 12 | 3 | 2 | 4 | 0 | 2 | 2 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0.35% |
| 13 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0.12% |
| 14 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.10% |
| 15 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0.10% |
| 16 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.06% |
| 17 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.02% |
| 18 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.04% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.04% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 7.68% | 6.73% | 4.61% | 4.50% | 6.84% | 3.09% | 4.61% | 6.82% | 10.89% | 7.59% | 4.91% | 6.10% | 8.09% | 7.17% | 5.04% | 5.32% | |

Source: Reference 2.7-41

# Table 2.7-60 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
10-15 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 109 | 69 | 58 | 35 | 38 | 12 | 29 | 67 | 115 | 147 | 139 | 154 | 152 | 130 | 123 | 93 | 40.82% |
| 3 | 51 | 32 | 38 | 28 | 33 | 4 | 6 | 28 | 86 | 84 | 91 | 81 | 73 | 79 | 63 | 53 | 23.05% |
| 4 | 28 | 30 | 11 | 17 | 13 | 3 | 8 | 20 | 35 | 51 | 70 | 49 | 59 | 52 | 39 | 25 | 14.16% |
| 5 | 13 | 21 | 9 | 14 | 16 | 5 | 6 | 3 | 16 | 27 | 39 | 33 | 25 | 30 | 29 | 22 | 8.55% |
| 6 | 16 | 12 | 4 | 8 | 6 | 1 | 4 | 3 | 14 | 21 | 22 | 16 | 16 | 10 | 14 | 7 | 4.83% |
| 7 | 8 | 6 | 4 | 3 | 2 | 0 | 0 | 3 | 10 | 9 | 15 | 14 | 17 | 9 | 6 | 5 | 3.08% |
| 8 | 4 | 3 | 5 | 0 | 0 | 0 | 0 | 2 | 5 | 15 | 10 | 11 | 9 | 6 | 3 | 0 | 2.03% |
| 9 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 9 | 11 | 0 | 2 | 4 | 1 | 3 | 1.17% |
| 10 | 2 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 2 | 1 | 5 | 0 | 1 | 2 | 0 | 0.58% |
| 11 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 4 | 2 | 1 | 3 | 1 | 1 | 0.56% |
| 12 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 1 | 1 | 1 | 0 | 0 | 0.36% |
| 13 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.17% |
| 14 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 1 | 0 | 0.19% |
| 15 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.14% |
| 16 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0.22% |
| 17 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.03% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.06% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 6.72% | 5.08% | 3.83% | 3.05% | 3.08% | 0.75% | 1.47% | 3.53% | 8.00% | 10.19% | 11.36% | 10.27% | 9.91% | 9.03% | 7.83% | 5.89% | |

Source: Reference 2.7-41

# Table 2.7-61 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
15-20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 18 | 22 | 6 | 4 | 4 | 0 | 4 | 3 | 26 | 58 | 79 | 68 | 69 | 47 | 33 | 27 | 49.32% |
| 3 | 16 | 9 | 0 | 2 | 0 | 1 | 0 | 1 | 10 | 18 | 53 | 29 | 42 | 26 | 29 | 8 | 25.71% |
| 4 | 5 | 1 | 3 | 0 | 0 | 0 | 1 | 1 | 10 | 15 | 26 | 14 | 20 | 10 | 8 | 3 | 12.33% |
| 5 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 4 | 13 | 7 | 5 | 7 | 1 | 4 | 5.58% |
| 6 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 3 | 2 | 8 | 10 | 2 | 1 | 4 | 4.00% |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 2 | 2 | 2 | 1.58% |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 3 | 0 | 1 | 0 | 0.84% |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0.42% |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.11% |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.11% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 4.85% | 3.58% | 1.05% | 0.74% | 0.42% | 0.11% | 0.53% | 0.84% | 5.48% | 10.43% | 19.49% | 13.91% | 15.70% | 9.91% | 7.90% | 5.06% | |

Source: Reference 2.7-41

## Table 2.7-62 Wind Direction Persistence Summaries - Detroit Metropolitan Airport 10 Meter Level

Number of Occurrences for Winds Blowing from the Same 67.5° Direction
2003-2007
>20 MPH

| HOURS | N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | % of PERSISTENT WINDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 29 | 24 | 30 | 13 | 14 | 10 | 62.01% |
| 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 12 | 9 | 9 | 6 | 5 | 1 | 24.45% |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 6 | 4 | 3 | 0 | 0 | 0 | 7.86% |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 2 | 0 | 3.93% |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0.87% |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0.44% |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.44% |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 46 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| % of PERSISTENT DIRECTION | 3.49% | 1.75% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 5.68% | 8.73% | 22.27% | 17.03% | 18.78% | 8.30% | 9.17% | 4.80% | |

## Table 2.7-63 Monthly and Annual Vertical Stability Class and Mean 60-Meter Wind Speed Distributions for Fermi Site (2003 - 2007) (Sheet 1 of 2)

| | Vertical Stability Categories | | | | | | |
|---|---|---|---|---|---|---|---|
| **Period** | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **January** | | | | | | | |
| Wind Speed (mph) | 13.49 | 14.28 | 14.39 | 15.21 | 13.28 | 13.22 | 11.75 |
| Frequency (%) | 10.09 | 5.38 | 6.33 | 46.28 | 23.88 | 6.14 | 1.89 |
| **February** | | | | | | | |
| Wind Speed (mph) | 13.13 | 14.44 | 14.61 | 14.80 | 12.45 | 10.84 | 10.37 |
| Frequency (%) | 17.13 | 5.53 | 5.36 | 41.95 | 21.09 | 6.27 | 2.66 |
| **March** | | | | | | | |
| Wind Speed (mph) | 12.43 | 13.10 | 13.20 | 15.49 | 13.47 | 14.48 | 14.66 |
| Frequency (%) | 16.99 | 5.33 | 3.71 | 34.09 | 23.73 | 10.15 | 6.01 |
| **April** | | | | | | | |
| Wind Speed (mph) | 14.56 | 14.92 | 16.39 | 16.56 | 14.50 | 13.17 | 12.61 |
| Frequency (%) | 20.91 | 4.86 | 4.89 | 25.74 | 26.11 | 11.62 | 5.87 |
| **May** | | | | | | | |
| Wind Speed (mph) | 12.41 | 12.53 | 12.62 | 13.65 | 11.65 | 10.88 | 9.90 |
| Frequency (%) | 23.10 | 6.53 | 6.26 | 28.65 | 22.12 | 8.71 | 4.65 |
| **June** | | | | | | | |
| Wind Speed (mph) | 9.98 | 10.80 | 11.16 | 11.99 | 11.36 | 10.28 | 8.43 |
| Frequency (%) | 26.93 | 5.88 | 4.43 | 23.17 | 24.87 | 10.03 | 4.71 |
| **July** | | | | | | | |
| Wind Speed (mph) | 10.03 | 10.43 | 10.80 | 12.04 | 10.34 | 8.59 | 8.05 |
| Frequency (%) | 31.05 | 5.46 | 4.18 | 19.94 | 23.01 | 9.89 | 6.47 |
| **August** | | | | | | | |
| Wind Speed (mph) | 9.56 | 9.57 | 9.60 | 11.12 | 10.75 | 9.37 | 8.91 |
| Frequency (%) | 26.83 | 5.69 | 4.69 | 18.82 | 25.07 | 12.64 | 6.26 |
| **September** | | | | | | | |
| Wind Speed (mph) | 10.06 | 11.90 | 11.75 | 13.21 | 12.29 | 10.37 | 8.37 |
| Frequency (%) | 25.25 | 4.61 | 3.78 | 21.19 | 26.83 | 10.50 | 7.83 |
| **October** | | | | | | | |
| Wind Speed (mph) | 11.69 | 12.81 | 14.65 | 14.55 | 13.03 | 12.70 | 9.93 |
| Frequency (%) | 17.20 | 4.45 | 3.47 | 28.38 | 28.52 | 11.46 | 6.53 |
| **November** | | | | | | | |
| Wind Speed (mph) | 13.13 | 14.69 | 15.81 | 14.86 | 12.89 | 12.17 | 12.10 |
| Frequency (%) | 10.76 | 4.06 | 4.68 | 42.16 | 25.70 | 9.31 | 3.32 |

**Table 2.7-63 Monthly and Annual Vertical Stability Class and Mean 60-Meter Wind Speed Distributions for Fermi Site (2003 - 2007) (Sheet 2 of 2)**

| | Vertical Stability Categories | | | | | | |
|---|---|---|---|---|---|---|---|
| **Period** | **A** | **B** | **C** | **D** | **E** | **F** | **G** |
| **December** | | | | | | | |
| Wind Speed (mph) | 12.45 | 14.39 | 16.21 | 15.12 | 13.69 | 12.86 | 12.80 |
| Frequency (%) | 8.90 | 5.05 | 5.56 | 48.55 | 22.26 | 8.12 | 1.56 |
| **Annual** | | | | | | | |
| Wind Speed (mph) | 11.48 | 12.70 | 13.49 | 14.37 | 12.47 | 11.51 | 10.32 |
| Frequency (%) | 19.63 | 5.25 | 4.78 | 31.54 | 24.41 | 9.57 | 4.82 |

## Table 2.7-64 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**All Pasquill Stability Classes**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 6 | 3 | 32 | 60 | 115 | 128 | 309 | 549 | 350 | 250 | 133 | 82 | 5 | 0 | 0 | 2022 |
| NNE | 3 | 5 | 16 | 47 | 76 | 106 | 313 | 474 | 243 | 183 | 104 | 67 | 18 | 0 | 0 | 1655 |
| NE | 6 | 3 | 10 | 29 | 40 | 51 | 148 | 609 | 601 | 288 | 110 | 28 | 2 | 0 | 0 | 1925 |
| ENE | 4 | 1 | 8 | 15 | 21 | 35 | 94 | 415 | 525 | 407 | 159 | 122 | 12 | 0 | 0 | 1818 |
| E | 8 | 3 | 10 | 14 | 16 | 21 | 118 | 419 | 487 | 383 | 273 | 220 | 37 | 7 | 0 | 2016 |
| ESE | 3 | 2 | 12 | 17 | 25 | 55 | 198 | 751 | 695 | 390 | 161 | 98 | 3 | 0 | 0 | 2410 |
| SE | 10 | 2 | 4 | 30 | 21 | 53 | 201 | 898 | 739 | 241 | 52 | 24 | 3 | 0 | 0 | 2278 |
| SSE | 7 | 3 | 19 | 33 | 49 | 54 | 207 | 728 | 596 | 199 | 53 | 11 | 3 | 0 | 0 | 1962 |
| S | 4 | 3 | 29 | 68 | 93 | 94 | 282 | 779 | 601 | 259 | 88 | 32 | 0 | 0 | 0 | 2332 |
| SSW | 8 | 9 | 50 | 78 | 127 | 114 | 346 | 1089 | 1122 | 753 | 341 | 223 | 9 | 0 | 0 | 4269 |
| SW | 12 | 14 | 78 | 120 | 179 | 226 | 523 | 950 | 837 | 632 | 426 | 289 | 59 | 3 | 0 | 4348 |
| WSW | 19 | 15 | 108 | 216 | 324 | 339 | 627 | 944 | 687 | 318 | 96 | 46 | 2 | 0 | 0 | 3741 |
| W | 22 | 15 | 178 | 290 | 273 | 212 | 454 | 734 | 490 | 243 | 95 | 26 | 3 | 1 | 0 | 3036 |
| WNW | 10 | 3 | 43 | 106 | 163 | 155 | 434 | 808 | 436 | 216 | 96 | 47 | 0 | 0 | 0 | 2517 |
| NW | 15 | 9 | 91 | 207 | 253 | 272 | 516 | 710 | 455 | 206 | 69 | 29 | 0 | 0 | 0 | 2832 |
| NNW | 10 | 21 | 183 | 335 | 415 | 361 | 480 | 750 | 479 | 236 | 126 | 59 | 1 | 1 | 0 | 3457 |
| TOTAL | 147 | 111 | 871 | 1665 | 2190 | 2276 | 5250 | 11607 | 9343 | 5204 | 2382 | 1403 | 157 | 12 | 0 | 42618 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-65 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class A Pasquill Stability Class**

**Wind Speed (Miles/Hour)**

| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | 0 | 0 | 1 | 0 | 3 | 6 | 18 | 56 | 69 | 45 | 5 | 10 | 0 | 0 | 0 | 213 |
| NNE | 0 | 0 | 0 | 0 | 3 | 4 | 25 | 61 | 38 | 31 | 9 | 10 | 0 | 0 | 0 | 181 |
| NE | 0 | 0 | 0 | 1 | 5 | 8 | 28 | 100 | 115 | 46 | 13 | 6 | 0 | 0 | 0 | 322 |
| ENE | 0 | 0 | 1 | 1 | 4 | 5 | 21 | 107 | 129 | 78 | 27 | 20 | 0 | 0 | 0 | 393 |
| E | 1 | 0 | 1 | 0 | 2 | 2 | 27 | 113 | 130 | 118 | 81 | 51 | 2 | 2 | 0 | 530 |
| ESE | 0 | 0 | 0 | 2 | 3 | 6 | 35 | 275 | 260 | 137 | 53 | 19 | 0 | 0 | 0 | 790 |
| SE | 5 | 0 | 0 | 0 | 0 | 5 | 39 | 376 | 349 | 73 | 5 | 0 | 0 | 0 | 0 | 852 |
| SSE | 1 | 0 | 0 | 2 | 5 | 6 | 40 | 251 | 275 | 61 | 8 | 1 | 0 | 0 | 0 | 650 |
| S | 0 | 0 | 0 | 1 | 5 | 3 | 44 | 226 | 181 | 36 | 7 | 2 | 0 | 0 | 0 | 505 |
| SSW | 1 | 0 | 1 | 0 | 4 | 4 | 54 | 214 | 294 | 157 | 53 | 16 | 4 | 0 | 0 | 802 |
| SW | 0 | 1 | 1 | 0 | 3 | 5 | 41 | 126 | 144 | 103 | 52 | 19 | 1 | 0 | 0 | 496 |
| WSW | 1 | 0 | 0 | 3 | 8 | 13 | 51 | 148 | 178 | 80 | 17 | 1 | 0 | 0 | 0 | 500 |
| W | 3 | 0 | 1 | 9 | 3 | 15 | 62 | 173 | 143 | 77 | 23 | 6 | 0 | 0 | 0 | 515 |
| WNW | 0 | 0 | 0 | 2 | 1 | 11 | 31 | 143 | 127 | 74 | 28 | 13 | 0 | 0 | 0 | 430 |
| NW | 0 | 1 | 1 | 1 | 8 | 19 | 66 | 199 | 171 | 70 | 22 | 10 | 0 | 0 | 0 | 568 |
| NNW | 0 | 0 | 3 | 4 | 10 | 20 | 67 | 216 | 197 | 70 | 26 | 14 | 0 | 0 | 0 | 627 |
| TOTAL | 12 | 2 | 10 | 26 | 67 | 132 | 649 | 2784 | 2800 | 1256 | 429 | 198 | 7 | 2 | 0 | 8374 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-66 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class B Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
| N | 0 | 0 | 0 | 1 | 6 | 6 | 14 | 41 | 27 | 10 | 8 | 8 | 0 | 0 | 0 | 121 |
| NNE | 0 | 0 | 0 | 0 | 1 | 5 | 14 | 22 | 17 | 14 | 6 | 5 | 0 | 0 | 0 | 84 |
| NE | 0 | 0 | 0 | 1 | 0 | 0 | 9 | 27 | 14 | 10 | 3 | 1 | 0 | 0 | 0 | 65 |
| ENE | 0 | 0 | 0 | 0 | 1 | 4 | 9 | 16 | 24 | 18 | 11 | 7 | 0 | 0 | 0 | 90 |
| E | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 16 | 24 | 26 | 16 | 9 | 0 | 0 | 0 | 97 |
| ESE | 0 | 0 | 0 | 0 | 2 | 2 | 9 | 38 | 25 | 17 | 6 | 8 | 0 | 0 | 0 | 107 |
| SE | 0 | 0 | 0 | 1 | 0 | 3 | 23 | 69 | 40 | 8 | 3 | 2 | 0 | 0 | 0 | 149 |
| SSE | 1 | 0 | 0 | 2 | 3 | 2 | 8 | 46 | 23 | 4 | 1 | 1 | 0 | 0 | 0 | 91 |
| S | 0 | 0 | 1 | 1 | 2 | 2 | 17 | 40 | 21 | 9 | 3 | 0 | 0 | 0 | 0 | 96 |
| SSW | 0 | 0 | 1 | 0 | 1 | 4 | 10 | 44 | 78 | 37 | 31 | 17 | 0 | 0 | 0 | 223 |
| SW | 0 | 0 | 1 | 1 | 1 | 5 | 16 | 50 | 54 | 42 | 42 | 29 | 8 | 1 | 0 | 250 |
| WSW | 0 | 0 | 0 | 1 | 3 | 7 | 19 | 48 | 77 | 17 | 12 | 4 | 0 | 0 | 0 | 188 |
| W | 0 | 0 | 0 | 2 | 7 | 4 | 22 | 77 | 49 | 23 | 6 | 1 | 0 | 0 | 0 | 191 |
| WNW | 0 | 0 | 0 | 1 | 2 | 5 | 21 | 55 | 40 | 22 | 7 | 3 | 0 | 0 | 0 | 156 |
| NW | 0 | 0 | 1 | 3 | 3 | 10 | 19 | 47 | 39 | 19 | 7 | 4 | 0 | 0 | 0 | 152 |
| NNW | 0 | 1 | 0 | 5 | 3 | 9 | 22 | 63 | 38 | 13 | 11 | 7 | 0 | 0 | 0 | 172 |
| TOTAL | 1 | 1 | 4 | 19 | 35 | 69 | 237 | 699 | 590 | 289 | 173 | 106 | 8 | 1 | 0 | 2232 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-67 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class C Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 0 | 0 | 0 | 0 | 3 | 6 | 16 | 44 | 21 | 12 | 9 | 8 | 0 | 0 | 0 | 119 |
| NNE | 0 | 0 | 0 | 1 | 0 | 2 | 14 | 32 | 14 | 14 | 17 | 1 | 0 | 0 | 0 | 95 |
| NE | 0 | 0 | 0 | 2 | 3 | 3 | 6 | 25 | 27 | 18 | 6 | 1 | 0 | 0 | 0 | 91 |
| ENE | 0 | 0 | 2 | 2 | 0 | 1 | 3 | 9 | 24 | 35 | 14 | 9 | 3 | 0 | 0 | 102 |
| E | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 18 | 13 | 18 | 9 | 13 | 2 | 0 | 0 | 78 |
| ESE | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 33 | 23 | 19 | 8 | 4 | 0 | 0 | 0 | 98 |
| SE | 0 | 0 | 0 | 0 | 1 | 2 | 9 | 37 | 24 | 9 | 3 | 1 | 0 | 0 | 0 | 86 |
| SSE | 0 | 0 | 0 | 0 | 1 | 1 | 10 | 28 | 20 | 3 | 6 | 1 | 0 | 0 | 0 | 70 |
| S | 0 | 0 | 0 | 2 | 4 | 5 | 9 | 32 | 20 | 15 | 3 | 1 | 0 | 0 | 0 | 91 |
| SSW | 0 | 0 | 1 | 3 | 3 | 3 | 13 | 41 | 50 | 34 | 20 | 13 | 0 | 0 | 0 | 181 |
| SW | 0 | 0 | 0 | 2 | 2 | 11 | 20 | 48 | 56 | 44 | 21 | 43 | 10 | 1 | 0 | 258 |
| WSW | 0 | 0 | 0 | 2 | 2 | 7 | 22 | 52 | 44 | 28 | 15 | 10 | 0 | 0 | 0 | 182 |
| W | 0 | 0 | 1 | 3 | 8 | 7 | 29 | 49 | 35 | 15 | 16 | 2 | 0 | 0 | 0 | 165 |
| WNW | 0 | 0 | 2 | 3 | 4 | 5 | 12 | 55 | 31 | 8 | 6 | 4 | 0 | 0 | 0 | 130 |
| NW | 0 | 0 | 0 | 4 | 5 | 9 | 17 | 44 | 25 | 10 | 11 | 5 | 0 | 0 | 0 | 130 |
| NNW | 0 | 0 | 3 | 2 | 7 | 10 | 25 | 50 | 21 | 16 | 14 | 6 | 0 | 0 | 0 | 154 |
| TOTAL | 0 | 0 | 9 | 27 | 44 | 75 | 216 | 597 | 448 | 298 | 178 | 122 | 15 | 1 | 0 | 2030 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-68 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class D Pasquill Stability Class**

| | | | | | | | Wind Speed (Miles/Hour) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 1 | 1 | 9 | 11 | 18 | 34 | 63 | 137 | 138 | 149 | 96 | 48 | 4 | 0 | 0 | 709 |
| NNE | 0 | 0 | 2 | 11 | 23 | 32 | 91 | 173 | 118 | 100 | 69 | 47 | 18 | 0 | 0 | 684 |
| NE | 0 | 0 | 2 | 9 | 6 | 13 | 56 | 256 | 357 | 194 | 78 | 20 | 2 | 0 | 0 | 993 |
| ENE | 0 | 0 | 2 | 3 | 8 | 6 | 28 | 141 | 231 | 216 | 97 | 82 | 5 | 0 | 0 | 819 |
| E | 1 | 0 | 2 | 1 | 5 | 3 | 29 | 96 | 181 | 146 | 121 | 101 | 23 | 2 | 0 | 711 |
| ESE | 0 | 1 | 1 | 3 | 6 | 15 | 42 | 151 | 186 | 142 | 55 | 47 | 1 | 0 | 0 | 650 |
| SE | 1 | 1 | 0 | 9 | 6 | 10 | 32 | 163 | 141 | 62 | 20 | 14 | 3 | 0 | 0 | 462 |
| SSE | 0 | 0 | 1 | 2 | 6 | 13 | 38 | 102 | 88 | 45 | 18 | 4 | 2 | 0 | 0 | 319 |
| S | 1 | 0 | 2 | 10 | 7 | 17 | 47 | 142 | 132 | 87 | 28 | 13 | 0 | 0 | 0 | 486 |
| SSW | 1 | 1 | 4 | 13 | 12 | 7 | 50 | 196 | 241 | 217 | 138 | 112 | 2 | 0 | 0 | 994 |
| SW | 0 | 1 | 10 | 12 | 18 | 29 | 97 | 356 | 441 | 361 | 278 | 178 | 37 | 1 | 0 | 1819 |
| WSW | 1 | 2 | 9 | 22 | 36 | 61 | 200 | 456 | 339 | 170 | 48 | 25 | 0 | 0 | 0 | 1369 |
| W | 4 | 2 | 17 | 23 | 42 | 45 | 165 | 278 | 209 | 116 | 46 | 14 | 1 | 0 | 0 | 962 |
| WNW | 0 | 0 | 5 | 15 | 28 | 39 | 114 | 279 | 187 | 91 | 47 | 24 | 0 | 0 | 0 | 829 |
| NW | 0 | 0 | 8 | 19 | 31 | 34 | 123 | 261 | 166 | 78 | 24 | 7 | 0 | 0 | 0 | 751 |
| NNW | 1 | 2 | 15 | 30 | 42 | 57 | 107 | 265 | 166 | 109 | 67 | 28 | 0 | 0 | 0 | 889 |
| TOTAL | 11 | 11 | 89 | 193 | 294 | 415 | 1282 | 3452 | 3321 | 2283 | 1230 | 764 | 98 | 3 | 0 | 13446 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-69 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class E Pasquill Stability Class**

| | | | | | | | | Wind Speed (Miles/Hour) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 3 | 0 | 9 | 20 | 36 | 40 | 87 | 160 | 80 | 28 | 14 | 8 | 1 | 0 | 0 | 486 |
| NNE | 1 | 2 | 5 | 20 | 28 | 39 | 130 | 146 | 47 | 22 | 3 | 4 | 0 | 0 | 0 | 447 |
| NE | 4 | 1 | 2 | 10 | 16 | 17 | 40 | 188 | 83 | 20 | 10 | 0 | 0 | 0 | 0 | 391 |
| ENE | 3 | 0 | 2 | 6 | 3 | 10 | 25 | 130 | 103 | 53 | 8 | 4 | 4 | 0 | 0 | 351 |
| E | 5 | 2 | 4 | 8 | 5 | 6 | 37 | 132 | 108 | 59 | 38 | 36 | 8 | 3 | 0 | 451 |
| ESE | 1 | 1 | 4 | 5 | 4 | 20 | 54 | 176 | 157 | 54 | 36 | 16 | 2 | 0 | 0 | 530 |
| SE | 2 | 1 | 2 | 8 | 7 | 18 | 46 | 153 | 130 | 59 | 9 | 5 | 0 | 0 | 0 | 440 |
| SSE | 2 | 1 | 8 | 10 | 17 | 15 | 62 | 179 | 112 | 64 | 12 | 0 | 1 | 0 | 0 | 483 |
| S | 1 | 1 | 13 | 24 | 34 | 33 | 110 | 254 | 197 | 82 | 31 | 11 | 0 | 0 | 0 | 791 |
| SSW | 3 | 5 | 11 | 31 | 38 | 34 | 129 | 421 | 357 | 258 | 87 | 56 | 2 | 0 | 0 | 1432 |
| SW | 5 | 5 | 21 | 37 | 77 | 95 | 234 | 327 | 123 | 71 | 31 | 19 | 3 | 0 | 0 | 1048 |
| WSW | 7 | 1 | 39 | 65 | 136 | 133 | 245 | 232 | 42 | 17 | 1 | 0 | 0 | 0 | 0 | 918 |
| W | 9 | 6 | 38 | 69 | 103 | 73 | 133 | 148 | 45 | 11 | 4 | 2 | 1 | 0 | 0 | 642 |
| WNW | 4 | 0 | 10 | 28 | 35 | 44 | 150 | 206 | 47 | 15 | 8 | 3 | 0 | 0 | 0 | 550 |
| NW | 6 | 3 | 15 | 60 | 80 | 101 | 218 | 141 | 48 | 27 | 5 | 3 | 0 | 0 | 0 | 707 |
| NNW | 2 | 3 | 31 | 72 | 125 | 103 | 161 | 137 | 53 | 23 | 7 | 4 | 1 | 1 | 0 | 723 |
| TOTAL | 58 | 32 | 214 | 473 | 744 | 781 | 1861 | 3130 | 1732 | 863 | 304 | 171 | 23 | 4 | 0 | 10390 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-70 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class F Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 2 | 2 | 10 | 15 | 36 | 24 | 83 | 93 | 12 | 5 | 1 | 0 | 0 | 0 | 0 | 283 |
| NNE | 1 | 3 | 6 | 12 | 14 | 19 | 35 | 30 | 9 | 2 | 0 | 0 | 0 | 0 | 0 | 131 |
| NE | 1 | 2 | 2 | 6 | 8 | 7 | 9 | 11 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 51 |
| ENE | 1 | 1 | 1 | 3 | 5 | 7 | 6 | 9 | 13 | 7 | 2 | 0 | 0 | 0 | 0 | 55 |
| E | 1 | 1 | 3 | 3 | 2 | 6 | 11 | 33 | 21 | 9 | 7 | 9 | 1 | 0 | 0 | 107 |
| ESE | 2 | 0 | 2 | 5 | 6 | 7 | 30 | 50 | 28 | 13 | 2 | 3 | 0 | 0 | 0 | 148 |
| SE | 1 | 0 | 2 | 8 | 2 | 5 | 29 | 61 | 32 | 17 | 7 | 1 | 0 | 0 | 0 | 165 |
| SSE | 2 | 1 | 5 | 16 | 15 | 12 | 36 | 90 | 52 | 13 | 7 | 3 | 0 | 0 | 0 | 252 |
| S | 2 | 1 | 8 | 21 | 34 | 32 | 46 | 66 | 43 | 26 | 15 | 5 | 0 | 0 | 0 | 299 |
| SSW | 2 | 2 | 27 | 26 | 48 | 46 | 67 | 142 | 88 | 42 | 9 | 9 | 1 | 0 | 0 | 509 |
| SW | 5 | 6 | 26 | 52 | 62 | 63 | 98 | 30 | 15 | 4 | 1 | 1 | 0 | 0 | 0 | 363 |
| WSW | 6 | 6 | 22 | 79 | 100 | 83 | 68 | 6 | 6 | 2 | 2 | 6 | 2 | 0 | 0 | 388 |
| W | 3 | 4 | 54 | 89 | 71 | 46 | 35 | 7 | 9 | 1 | 0 | 1 | 1 | 1 | 0 | 322 |
| WNW | 5 | 3 | 17 | 29 | 52 | 32 | 66 | 51 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | 265 |
| NW | 3 | 3 | 27 | 63 | 64 | 63 | 61 | 16 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 308 |
| NNW | 6 | 8 | 64 | 92 | 99 | 83 | 71 | 16 | 3 | 5 | 1 | 0 | 0 | 0 | 0 | 448 |
| TOTAL | 43 | 43 | 276 | 519 | 618 | 535 | 751 | 711 | 346 | 154 | 54 | 38 | 5 | 1 | 0 | 4094 |

Notes:
Data from 10 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-71 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**10-m Level**

**Class G Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
| N | 0 | 0 | 3 | 13 | 13 | 12 | 28 | 18 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 91 |
| NNE | 1 | 0 | 3 | 3 | 7 | 5 | 4 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| NE | 1 | 0 | 4 | 0 | 2 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| ENE | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| E | 0 | 0 | 0 | 1 | 1 | 2 | 7 | 11 | 10 | 7 | 1 | 1 | 1 | 0 | 0 | 42 |
| ESE | 0 | 0 | 5 | 2 | 4 | 3 | 19 | 28 | 16 | 8 | 1 | 1 | 0 | 0 | 0 | 87 |
| SE | 1 | 0 | 0 | 4 | 5 | 10 | 23 | 39 | 23 | 13 | 5 | 1 | 0 | 0 | 0 | 124 |
| SSE | 1 | 1 | 5 | 1 | 2 | 5 | 13 | 32 | 26 | 9 | 1 | 1 | 0 | 0 | 0 | 97 |
| S | 0 | 1 | 5 | 9 | 7 | 2 | 9 | 19 | 7 | 4 | 1 | 0 | 0 | 0 | 0 | 64 |
| SSW | 1 | 1 | 5 | 5 | 21 | 16 | 23 | 31 | 14 | 8 | 3 | 0 | 0 | 0 | 0 | 128 |
| SW | 2 | 1 | 19 | 16 | 16 | 18 | 17 | 13 | 4 | 7 | 1 | 0 | 0 | 0 | 0 | 114 |
| WSW | 4 | 6 | 38 | 44 | 39 | 35 | 22 | 2 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 196 |
| W | 3 | 3 | 67 | 95 | 39 | 22 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 239 |
| WNW | 1 | 0 | 9 | 28 | 41 | 19 | 40 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 157 |
| NW | 6 | 2 | 39 | 57 | 62 | 36 | 12 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 216 |
| NNW | 1 | 7 | 67 | 130 | 129 | 79 | 27 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 444 |
| TOTAL | 22 | 22 | 269 | 408 | 388 | 269 | 254 | 234 | 106 | 61 | 14 | 4 | 1 | 0 | 0 | 2052 |

Notes:

Data from 10 meter level

Data from 2003-2007

Calm is defined as a wind speed less than 1mph

## Table 2.7-72 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**60-m Level**

**All Pasquill Stability Classes**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
| N | 0 | 1 | 2 | 7 | 12 | 25 | 79 | 196 | 203 | 268 | 281 | 317 | 111 | 34 | 5 | 1541 |
| NNE | 0 | 0 | 2 | 8 | 11 | 23 | 77 | 217 | 255 | 247 | 230 | 324 | 122 | 34 | 19 | 1569 |
| NE | 0 | 0 | 1 | 14 | 15 | 21 | 80 | 273 | 420 | 462 | 408 | 449 | 155 | 9 | 3 | 2310 |
| ENE | 3 | 0 | 2 | 4 | 17 | 17 | 58 | 205 | 329 | 389 | 392 | 469 | 200 | 72 | 15 | 2172 |
| E | 3 | 0 | 4 | 6 | 11 | 10 | 56 | 180 | 298 | 288 | 317 | 543 | 369 | 166 | 86 | 2337 |
| ESE | 6 | 3 | 3 | 3 | 13 | 12 | 60 | 281 | 433 | 364 | 312 | 541 | 228 | 76 | 30 | 2365 |
| SE | 6 | 3 | 0 | 6 | 9 | 15 | 53 | 298 | 493 | 403 | 310 | 340 | 96 | 34 | 19 | 2085 |
| SSE | 8 | 1 | 2 | 9 | 14 | 17 | 72 | 283 | 482 | 382 | 289 | 302 | 103 | 22 | 10 | 1996 |
| S | 2 | 0 | 2 | 5 | 16 | 18 | 51 | 279 | 393 | 464 | 355 | 509 | 206 | 83 | 26 | 2409 |
| SSW | 1 | 0 | 1 | 5 | 9 | 20 | 57 | 222 | 386 | 573 | 606 | 1042 | 576 | 209 | 59 | 3766 |
| SW | 2 | 1 | 2 | 5 | 11 | 18 | 50 | 205 | 350 | 529 | 667 | 1058 | 581 | 267 | 124 | 3870 |
| WSW | 3 | 2 | 5 | 8 | 20 | 22 | 50 | 187 | 326 | 591 | 776 | 1297 | 550 | 211 | 123 | 4171 |
| W | 3 | 1 | 2 | 8 | 21 | 21 | 45 | 182 | 380 | 580 | 690 | 956 | 450 | 159 | 92 | 3590 |
| WNW | 2 | 0 | 4 | 5 | 19 | 23 | 88 | 226 | 343 | 445 | 497 | 455 | 144 | 52 | 10 | 2313 |
| NW | 1 | 0 | 4 | 5 | 21 | 27 | 48 | 203 | 312 | 526 | 574 | 569 | 266 | 100 | 44 | 2700 |
| NNW | 1 | 1 | 3 | 11 | 20 | 29 | 80 | 187 | 334 | 535 | 671 | 917 | 369 | 181 | 135 | 3474 |
| TOTAL | 41 | 13 | 39 | 109 | 239 | 318 | 1004 | 3624 | 5737 | 7046 | 7375 | 10088 | 4526 | 1709 | 800 | 42668 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-73 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003-2007**

**60-m Level**

**Class A Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
| N | 0 | 0 | 0 | 0 | 0 | 3 | 7 | 33 | 25 | 33 | 24 | 24 | 1 | 7 | 0 | 157 |
| NNE | 0 | 0 | 0 | 0 | 1 | 2 | 8 | 27 | 28 | 28 | 22 | 31 | 10 | 7 | 0 | 164 |
| NE | 0 | 0 | 1 | 2 | 2 | 2 | 11 | 46 | 61 | 61 | 84 | 60 | 18 | 1 | 0 | 349 |
| ENE | 1 | 0 | 0 | 1 | 3 | 5 | 16 | 47 | 94 | 79 | 65 | 72 | 26 | 10 | 0 | 419 |
| E | 0 | 0 | 1 | 0 | 0 | 2 | 10 | 67 | 122 | 85 | 102 | 107 | 99 | 25 | 4 | 624 |
| ESE | 1 | 0 | 1 | 1 | 2 | 2 | 14 | 131 | 228 | 148 | 91 | 116 | 30 | 7 | 0 | 772 |
| SE | 2 | 0 | 0 | 0 | 1 | 3 | 16 | 127 | 260 | 154 | 70 | 20 | 3 | 0 | 0 | 656 |
| SSE | 2 | 0 | 0 | 2 | 0 | 2 | 16 | 104 | 232 | 156 | 65 | 16 | 5 | 0 | 0 | 600 |
| S | 0 | 0 | 1 | 1 | 2 | 5 | 6 | 90 | 177 | 173 | 64 | 47 | 10 | 0 | 0 | 576 |
| SSW | 0 | 0 | 0 | 1 | 0 | 3 | 12 | 68 | 125 | 167 | 135 | 171 | 45 | 7 | 1 | 735 |
| SW | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 51 | 56 | 80 | 82 | 108 | 30 | 14 | 5 | 439 |
| WSW | 1 | 0 | 1 | 1 | 3 | 2 | 3 | 35 | 52 | 71 | 86 | 188 | 71 | 27 | 3 | 544 |
| W | 0 | 0 | 1 | 0 | 2 | 2 | 6 | 45 | 86 | 102 | 92 | 166 | 118 | 38 | 16 | 674 |
| WNW | 0 | 0 | 0 | 1 | 2 | 3 | 6 | 36 | 49 | 63 | 62 | 47 | 26 | 4 | 2 | 301 |
| NW | 0 | 0 | 1 | 0 | 2 | 3 | 9 | 38 | 83 | 102 | 112 | 123 | 73 | 22 | 14 | 582 |
| NNW | 0 | 0 | 0 | 1 | 2 | 2 | 11 | 49 | 91 | 121 | 113 | 205 | 118 | 40 | 26 | 779 |
| TOTAL | 7 | 0 | 7 | 11 | 23 | 44 | 160 | 994 | 1769 | 1623 | 1269 | 1501 | 683 | 209 | 71 | 8371 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-74 Annual JFD of Wind Sirection, Wind Speed, and Stability Class

**Fermi Site**

**2003 - 2007**

**60-m Level**

**Class B Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 17 | 11 | 10 | 10 | 8 | 4 | 3 | 0 | 74 |
| NNE | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 15 | 10 | 6 | 12 | 16 | 7 | 0 | 0 | 70 |
| NE | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 3 | 16 | 18 | 10 | 14 | 5 | 1 | 0 | 73 |
| ENE | 0 | 0 | 0 | 0 | 1 | 2 | 4 | 10 | 9 | 13 | 11 | 20 | 10 | 5 | 0 | 85 |
| E | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 11 | 16 | 11 | 13 | 27 | 19 | 7 | 0 | 110 |
| ESE | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 18 | 14 | 16 | 16 | 19 | 13 | 4 | 1 | 109 |
| SE | 0 | 0 | 0 | 0 | 2 | 1 | 4 | 24 | 26 | 16 | 17 | 8 | 2 | 1 | 0 | 101 |
| SSE | 0 | 0 | 0 | 1 | 1 | 2 | 6 | 21 | 33 | 16 | 13 | 5 | 1 | 0 | 0 | 99 |
| S | 0 | 0 | 0 | 1 | 2 | 0 | 3 | 16 | 27 | 28 | 8 | 18 | 5 | 0 | 0 | 108 |
| SSW | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 25 | 23 | 25 | 36 | 49 | 29 | 7 | 1 | 201 |
| SW | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 13 | 24 | 22 | 37 | 48 | 37 | 17 | 12 | 215 |
| WSW | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 12 | 18 | 30 | 26 | 74 | 34 | 17 | 16 | 232 |
| W | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 7 | 30 | 41 | 33 | 70 | 43 | 9 | 9 | 248 |
| WNW | 0 | 0 | 1 | 0 | 1 | 1 | 5 | 20 | 33 | 29 | 18 | 27 | 10 | 4 | 0 | 149 |
| NW | 0 | 0 | 1 | 0 | 1 | 4 | 4 | 10 | 19 | 35 | 26 | 33 | 31 | 8 | 3 | 175 |
| NNW | 0 | 0 | 0 | 0 | 2 | 4 | 8 | 8 | 21 | 28 | 30 | 45 | 23 | 14 | 10 | 193 |
| TOTAL | 1 | 0 | 2 | 5 | 15 | 20 | 76 | 230 | 330 | 344 | 316 | 481 | 273 | 97 | 52 | 2242 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-75 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003 - 2007**

**60-m Level**

**Class C Pasquill Stability Class**

| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | | |
| N | 0 | 0 | 0 | 0 | 2 | 1 | 6 | 18 | 13 | 14 | 14 | 12 | 10 | 5 | 1 | 96 |
| NNE | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 9 | 13 | 17 | 3 | 22 | 8 | 1 | 0 | 80 |
| NE | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 12 | 12 | 20 | 15 | 24 | 9 | 0 | 0 | 95 |
| ENE | 0 | 0 | 0 | 1 | 1 | 0 | 4 | 5 | 9 | 13 | 21 | 40 | 12 | 7 | 2 | 115 |
| E | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 6 | 9 | 9 | 7 | 22 | 15 | 8 | 5 | 85 |
| ESE | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 10 | 17 | 8 | 10 | 25 | 11 | 2 | 0 | 86 |
| SE | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 18 | 16 | 13 | 11 | 11 | 3 | 0 | 0 | 73 |
| SSE | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 16 | 18 | 12 | 8 | 10 | 7 | 1 | 0 | 79 |
| S | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 18 | 17 | 13 | 16 | 18 | 5 | 0 | 0 | 92 |
| SSW | 0 | 0 | 0 | 0 | 1 | 1 | 4 | 5 | 17 | 32 | 24 | 38 | 25 | 7 | 1 | 155 |
| SW | 0 | 0 | 0 | 0 | 2 | 2 | 3 | 19 | 14 | 20 | 28 | 42 | 26 | 18 | 25 | 199 |
| WSW | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 10 | 23 | 22 | 30 | 67 | 41 | 21 | 25 | 243 |
| W | 0 | 0 | 1 | 1 | 1 | 3 | 2 | 12 | 22 | 26 | 27 | 52 | 34 | 12 | 13 | 206 |
| WNW | 0 | 0 | 0 | 0 | 2 | 1 | 7 | 10 | 22 | 27 | 23 | 25 | 9 | 3 | 0 | 129 |
| NW | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 14 | 14 | 24 | 16 | 22 | 19 | 4 | 9 | 128 |
| NNW | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 10 | 17 | 24 | 28 | 38 | 25 | 15 | 18 | 183 |
| TOTAL | 0 | 0 | 2 | 5 | 13 | 19 | 55 | 192 | 253 | 294 | 281 | 468 | 259 | 104 | 99 | 2044 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-76 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003 - 2007**

**60-m Level**

**Class D Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 0 | 1 | 0 | 3 | 4 | 5 | 21 | 54 | 64 | 60 | 76 | 142 | 78 | 16 | 3 | 527 |
| NNE | 0 | 0 | 1 | 3 | 3 | 8 | 22 | 77 | 96 | 84 | 78 | 150 | 91 | 25 | 19 | 657 |
| NE | 0 | 0 | 0 | 3 | 4 | 5 | 12 | 71 | 98 | 200 | 209 | 298 | 110 | 7 | 2 | 1019 |
| ENE | 1 | 0 | 1 | 0 | 1 | 1 | 6 | 43 | 74 | 131 | 191 | 269 | 124 | 47 | 12 | 901 |
| E | 2 | 0 | 3 | 1 | 0 | 4 | 14 | 31 | 48 | 75 | 95 | 220 | 158 | 85 | 45 | 781 |
| ESE | 3 | 1 | 1 | 0 | 2 | 1 | 17 | 37 | 77 | 105 | 99 | 187 | 75 | 30 | 6 | 641 |
| SE | 1 | 1 | 0 | 0 | 2 | 2 | 8 | 43 | 62 | 85 | 84 | 94 | 23 | 3 | 3 | 411 |
| SSE | 0 | 0 | 0 | 0 | 3 | 5 | 13 | 46 | 61 | 55 | 55 | 58 | 16 | 2 | 1 | 315 |
| S | 1 | 0 | 0 | 1 | 2 | 3 | 12 | 42 | 48 | 64 | 82 | 126 | 51 | 19 | 1 | 452 |
| SSW | 0 | 0 | 0 | 1 | 3 | 6 | 5 | 33 | 53 | 104 | 141 | 254 | 164 | 70 | 19 | 853 |
| SW | 1 | 0 | 0 | 1 | 2 | 3 | 9 | 22 | 74 | 117 | 180 | 455 | 352 | 162 | 67 | 1445 |
| WSW | 0 | 1 | 1 | 3 | 10 | 8 | 9 | 41 | 110 | 209 | 268 | 576 | 351 | 132 | 78 | 1797 |
| W | 1 | 1 | 0 | 0 | 8 | 6 | 9 | 38 | 87 | 163 | 190 | 321 | 197 | 88 | 42 | 1151 |
| WNW | 0 | 0 | 0 | 2 | 4 | 2 | 23 | 46 | 95 | 144 | 160 | 191 | 82 | 37 | 7 | 793 |
| NW | 0 | 0 | 1 | 1 | 5 | 6 | 12 | 41 | 68 | 129 | 151 | 193 | 105 | 41 | 14 | 767 |
| NNW | 1 | 0 | 2 | 6 | 4 | 9 | 19 | 39 | 72 | 104 | 162 | 267 | 139 | 81 | 72 | 977 |
| TOTAL | 11 | 5 | 10 | 25 | 57 | 74 | 211 | 704 | 1187 | 1829 | 2221 | 3801 | 2116 | 845 | 391 | 13487 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-77 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003 - 2007**

**60-m Level**

**Class E Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Direction** | **<1.0** | **1.0-1.12** | **1.121 -1.68** | **1.681 -2.24** | **2.241 -2.80** | **2.801 -3.36** | **3.361 -4.47** | **4.471 -6.71** | **6.711 -8.95** | **8.951 -11.18** | **11.181 -13.42** | **13.421 -17.9** | **17.91 -22.37** | **22.371 -26.84** | **>26.84** | **Total** |
| N | 0 | 0 | 1 | 1 | 2 | 9 | 20 | 38 | 46 | 96 | 84 | 91 | 16 | 3 | 1 | 408 |
| NNE | 0 | 0 | 0 | 1 | 3 | 5 | 18 | 48 | 74 | 80 | 64 | 80 | 4 | 1 | 0 | 378 |
| NE | 0 | 0 | 0 | 4 | 3 | 3 | 19 | 78 | 145 | 121 | 72 | 41 | 13 | 0 | 1 | 500 |
| ENE | 1 | 0 | 1 | 0 | 4 | 4 | 13 | 48 | 71 | 119 | 92 | 59 | 25 | 3 | 1 | 441 |
| E | 0 | 0 | 0 | 2 | 4 | 1 | 9 | 34 | 79 | 89 | 83 | 136 | 66 | 34 | 20 | 557 |
| ESE | 1 | 1 | 0 | 0 | 1 | 4 | 9 | 36 | 75 | 73 | 80 | 137 | 58 | 18 | 11 | 504 |
| SE | 2 | 1 | 0 | 2 | 1 | 2 | 13 | 43 | 91 | 101 | 98 | 125 | 25 | 8 | 2 | 514 |
| SSE | 4 | 1 | 1 | 2 | 8 | 5 | 14 | 60 | 84 | 82 | 99 | 112 | 28 | 5 | 1 | 506 |
| S | 1 | 0 | 1 | 0 | 3 | 1 | 11 | 56 | 64 | 115 | 116 | 204 | 74 | 40 | 12 | 698 |
| SSW | 0 | 0 | 0 | 1 | 3 | 6 | 11 | 28 | 75 | 155 | 202 | 398 | 221 | 79 | 23 | 1202 |
| SW | 1 | 1 | 1 | 0 | 1 | 6 | 13 | 46 | 86 | 165 | 228 | 299 | 107 | 50 | 15 | 1019 |
| WSW | 0 | 0 | 0 | 2 | 4 | 5 | 12 | 41 | 76 | 170 | 258 | 315 | 41 | 11 | 0 | 935 |
| W | 0 | 0 | 0 | 3 | 3 | 3 | 11 | 35 | 95 | 153 | 213 | 233 | 52 | 10 | 4 | 815 |
| WNW | 0 | 0 | 1 | 1 | 6 | 7 | 21 | 54 | 79 | 111 | 146 | 109 | 17 | 4 | 1 | 557 |
| NW | 0 | 0 | 0 | 2 | 5 | 5 | 12 | 42 | 70 | 142 | 160 | 126 | 38 | 23 | 4 | 629 |
| NNW | 0 | 1 | 0 | 1 | 5 | 3 | 17 | 44 | 73 | 142 | 150 | 221 | 60 | 28 | 8 | 753 |
| TOTAL | 10 | 5 | 6 | 22 | 56 | 69 | 223 | 731 | 1283 | 1914 | 2145 | 2686 | 845 | 317 | 104 | 10416 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-78 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003 - 2007**

**60-m Level**

**Class F Pasquill Stability Class**

| | | | | | | | | Wind Speed (Miles/Hour) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
| N | 0 | 0 | 0 | 3 | 3 | 2 | 10 | 16 | 26 | 39 | 50 | 30 | 1 | 0 | 0 | 180 |
| NNE | 0 | 0 | 0 | 1 | 2 | 2 | 6 | 25 | 21 | 24 | 38 | 18 | 1 | 0 | 0 | 138 |
| NE | 0 | 0 | 0 | 3 | 1 | 2 | 16 | 41 | 68 | 32 | 14 | 11 | 0 | 0 | 0 | 188 |
| ENE | 0 | 0 | 0 | 1 | 1 | 4 | 9 | 36 | 53 | 24 | 9 | 8 | 3 | 0 | 0 | 148 |
| E | 1 | 0 | 0 | 2 | 4 | 0 | 10 | 17 | 17 | 14 | 14 | 22 | 9 | 5 | 9 | 124 |
| ESE | 0 | 0 | 0 | 1 | 2 | 4 | 7 | 30 | 19 | 11 | 13 | 45 | 25 | 6 | 8 | 171 |
| SE | 0 | 1 | 0 | 4 | 2 | 4 | 7 | 27 | 34 | 23 | 15 | 56 | 23 | 10 | 3 | 209 |
| SSE | 0 | 0 | 1 | 2 | 0 | 2 | 8 | 24 | 47 | 51 | 39 | 65 | 25 | 11 | 4 | 279 |
| S | 0 | 0 | 0 | 1 | 5 | 6 | 6 | 34 | 40 | 55 | 45 | 65 | 41 | 19 | 10 | 327 |
| SSW | 1 | 0 | 0 | 1 | 1 | 1 | 4 | 29 | 56 | 65 | 47 | 102 | 79 | 31 | 14 | 431 |
| SW | 0 | 0 | 0 | 1 | 1 | 2 | 4 | 28 | 65 | 98 | 79 | 75 | 19 | 1 | 0 | 373 |
| WSW | 1 | 1 | 2 | 1 | 2 | 2 | 10 | 23 | 29 | 55 | 77 | 66 | 5 | 1 | 0 | 275 |
| W | 1 | 0 | 0 | 2 | 4 | 4 | 6 | 19 | 30 | 59 | 84 | 89 | 6 | 2 | 8 | 314 |
| WNW | 2 | 0 | 2 | 0 | 3 | 4 | 10 | 36 | 42 | 40 | 60 | 44 | 0 | 0 | 0 | 243 |
| NW | 1 | 0 | 1 | 2 | 3 | 2 | 4 | 36 | 33 | 54 | 75 | 52 | 0 | 2 | 0 | 265 |
| NNW | 0 | 0 | 1 | 1 | 3 | 2 | 12 | 20 | 41 | 80 | 132 | 111 | 4 | 3 | 1 | 411 |
| TOTAL | 7 | 2 | 7 | 26 | 37 | 43 | 129 | 441 | 621 | 724 | 791 | 859 | 241 | 91 | 57 | 4076 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-79 Annual JFD of Wind Direction, Wind Speed, and Stability Class

**Fermi Site**

**2003 - 2007**

**60-m Level**

**Class G Pasquill Stability Class**

| | Wind Speed (Miles/Hour) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | <1.0 | 1.0-1.12 | 1.121 -1.68 | 1.681 -2.24 | 2.241 -2.80 | 2.801 -3.36 | 3.361 -4.47 | 4.471 -6.71 | 6.711 -8.95 | 8.951 -11.18 | 11.181 -13.42 | 13.421 -17.9 | 17.91 -22.37 | 22.371 -26.84 | >26.84 | Total |
| N | 0 | 0 | 1 | 0 | 1 | 3 | 6 | 20 | 18 | 16 | 23 | 10 | 1 | 0 | 0 | 99 |
| NNE | 0 | 0 | 1 | 2 | 1 | 4 | 16 | 16 | 13 | 8 | 13 | 7 | 1 | 0 | 0 | 82 |
| NE | 0 | 0 | 0 | 1 | 5 | 8 | 15 | 22 | 20 | 10 | 4 | 1 | 0 | 0 | 0 | 86 |
| ENE | 0 | 0 | 0 | 1 | 6 | 1 | 6 | 16 | 19 | 10 | 3 | 1 | 0 | 0 | 0 | 63 |
| E | 0 | 0 | 0 | 0 | 3 | 1 | 6 | 14 | 7 | 5 | 3 | 9 | 3 | 2 | 3 | 56 |
| ESE | 0 | 1 | 1 | 1 | 6 | 0 | 4 | 19 | 3 | 3 | 3 | 12 | 16 | 9 | 4 | 82 |
| SE | 1 | 0 | 0 | 0 | 1 | 3 | 4 | 16 | 4 | 11 | 15 | 26 | 17 | 12 | 11 | 121 |
| SSE | 2 | 0 | 0 | 1 | 2 | 0 | 10 | 12 | 7 | 10 | 10 | 36 | 21 | 3 | 4 | 118 |
| S | 0 | 0 | 0 | 1 | 2 | 2 | 9 | 23 | 20 | 16 | 24 | 31 | 20 | 5 | 3 | 156 |
| SSW | 0 | 0 | 1 | 0 | 1 | 3 | 16 | 34 | 37 | 25 | 21 | 30 | 13 | 8 | 0 | 189 |
| SW | 0 | 0 | 1 | 3 | 4 | 2 | 7 | 26 | 31 | 27 | 33 | 31 | 10 | 5 | 0 | 180 |
| WSW | 1 | 0 | 0 | 0 | 0 | 3 | 12 | 25 | 18 | 34 | 31 | 11 | 7 | 2 | 1 | 145 |
| W | 1 | 0 | 0 | 2 | 0 | 3 | 8 | 26 | 30 | 36 | 51 | 25 | 0 | 0 | 0 | 182 |
| WNW | 0 | 0 | 0 | 1 | 1 | 5 | 16 | 24 | 23 | 31 | 28 | 12 | 0 | 0 | 0 | 141 |
| NW | 0 | 0 | 0 | 0 | 3 | 5 | 5 | 22 | 25 | 40 | 34 | 20 | 0 | 0 | 0 | 154 |
| NNW | 0 | 0 | 0 | 2 | 2 | 6 | 10 | 17 | 19 | 36 | 56 | 30 | 0 | 0 | 0 | 178 |
| TOTAL | 5 | 1 | 5 | 15 | 38 | 49 | 150 | 332 | 294 | 318 | 352 | 292 | 109 | 46 | 26 | 2032 |

Notes:
Data from 60 meter level
Data from 2003-2007
Calm is defined as a wind speed less than 1mph

## Table 2.7-80 Distances to Site Boundary

| Sector | Distance to Site Boundary (meters) |
|---|---|
| N | 909 |
| NNE | 1381 |
| NE | 1904 |
| ENE | N/A |
| E | N/A |
| ESE | N/A |
| SE | N/A |
| SSE | 981 |
| S | 981 |
| SSW | 1006 |
| SW | 1297 |
| WSW | 1131 |
| W | 793 |
| WNW | 769 |
| NW | 769 |
| NNW | 769 |

Note: There are no site boundary distances listed for the ENE, E, ESE, and SE sectors since they are directly towards Lake Erie.

## Table 2.7-81 Distances to Nearest Residence

| Sector | Distance to Nearest Residence (meters) |
|---|---|
| NNE | 1959 |
| NE | 2032 |
| SSE | 1328 |
| SSW | 1292 |
| SW | 1456 |
| WSW | 1671 |
| W | 1421 |
| NW | 957 |
| NNW | 1770 |

Note: Sectors are included with noted residences from Fermi site annual land use survey.

## Table 2.7-82 Distances to Nearest Vegetable Garden

| Sector | Distance to Nearest Vegetable Garden (meters) |
|---|---|
| N | 3566 |
| NNE | 3327 |
| NE | 3452 |
| S | 1917 |
| WSW | 3295 |
| W | 2272 |
| NW | 960 |
| NNW | 1607 |

Note: Sectors are included with noted vegetable gardens from Fermi site annual land use survey.

## Table 2.7-83 Distances to Nearest Sheep

| Sector | Distance to Nearest Sheep (meters) |
|---|---|
| NNE | 7088 |
| NNW | 7023 |

Note: Sectors are included with noted sheep from Fermi site annual land use survey.

## Table 2.7-84 Distances to Nearest Goat

| Sector | Distance to Nearest Goat (meters) |
|---|---|
| WNW | 3554 |
| NNW | 4811 |

Note: Sectors are included with noted goats from Fermi site annual land use survey.

## Table 2.7-85 Distances to Nearest Meat Cow

| Sector | Distance to Nearest Meat Cow (meters) |
|---|---|
| NNE | 7089 |
| NNW | 4754 |

Note: Sectors are included with noted meat cows from Fermi site annual land use survey.

## Table 2.7-86 Distances to Nearest Milk Cow

| Sector | Distance to Nearest Milk Cow (meters) |
|---|---|
| WNW | 3363 |
| NW | 5719 |

Note: Sectors are included with noted milk cows from Fermi site annual land use survey.

## Table 2.7-87 Site Boundary X/Q and D/Q Factors for Ground-Level Release (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted X/Q (sec/$m^3$) | 8.0 Day Decay, Depleted X/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| N | 9.6E-06 | 9.5E-06 | 8.7E-06 | 3.5E-08 |
| NNE | 6.8E-06 | 6.8E-06 | 6.0E-06 | 2.9E-08 |
| NE | 3.5E-06 | 3.4E-06 | 3.0E-06 | 1.3E-08 |
| SSE | 1.1E-05 | 1.1E-05 | 1.0E-05 | 3.3E-08 |
| S | 8.2E-06 | 8.2E-06 | 7.4E-06 | 2.6E-08 |
| SSW | 5.8E-06 | 5.8E-06 | 5.2E-06 | 2.1E-08 |
| SW | 2.7E-06 | 2.7E-06 | 2.4E-06 | 1.5E-08 |
| WSW | 2.6E-06 | 2.6E-06 | 2.3E-06 | 1.9E-08 |
| W | 5.5E-06 | 5.5E-06 | 5.1E-06 | 3.7E-08 |
| WNW | 8.1E-06 | 8.1E-06 | 7.4E-06 | 4.6E-08 |
| NW | 7.9E-06 | 7.9E-06 | 7.2E-06 | 4.4E-08 |
| NNW | 9.2E-06 | 9.2E-06 | 8.4E-06 | 3.9E-08 |

Note: There are no values listed for the ENE, E, ESE and SE sectors because these sectors are directly towards Lake Erie.

## Table 2.7-88 Site Boundary χ/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted χ/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/$m^3$) | 8.0 Day Decay, Depleted χ/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| N | 5.3E-07 | 5.3E-07 | 4.9E-07 | 1.0E-08 |
| NNE | 6.0E-07 | 6.0E-07 | 5.5E-07 | 1.1E-08 |
| NE | 3.3E-07 | 3.3E-07 | 3.1E-07 | 5.8E-09 |
| SSE | 3.8E-07 | 3.8E-07 | 3.5E-07 | 9.2E-09 |
| S | 3.8E-07 | 3.8E-07 | 3.5E-07 | 7.4E-09 |
| SSW | 2.8E-07 | 2.8E-07 | 2.6E-07 | 5.8E-09 |
| SW | 2.9E-07 | 2.9E-07 | 2.7E-07 | 6.0E-09 |
| WSW | 3.2E-07 | 3.2E-07 | 2.9E-07 | 8.1E-09 |
| W | 5.7E-07 | 5.7E-07 | 5.3E-07 | 1.5E-08 |
| WNW | 6.6E-07 | 6.6E-07 | 6.2E-07 | 1.7E-08 |
| NW | 6.4E-07 | 6.4E-07 | 6.1E-07 | 1.6E-08 |
| NNW | 6.0E-07 | 6.0E-07 | 5.6E-07 | 1.3E-08 |

Note: There are no values listed for the ENE, E, ESE and SE sectors because these sectors are directly towards Lake Erie.

# Table 2.7-89 Site Boundary X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| N | 6.1E-07 | 6.1E-07 | 5.6E-07 | 9.6E-09 |
| NNE | 6.3E-07 | 6.3E-07 | 5.7E-07 | 1.0E-08 |
| NE | 2.9E-07 | 2.9E-07 | 2.7E-07 | 4.8E-09 |
| SSE | 4.3E-07 | 4.3E-07 | 3.9E-07 | 8.1E-09 |
| S | 4.2E-07 | 4.2E-07 | 3.9E-07 | 6.3E-09 |
| SSW | 3.0E-07 | 3.0E-07 | 2.8E-07 | 5.1E-09 |
| SW | 2.6E-07 | 2.6E-07 | 2.3E-07 | 5.0E-09 |
| WSW | 3.0E-07 | 3.0E-07 | 2.7E-07 | 7.0E-09 |
| W | 6.2E-07 | 6.2E-07 | 5.7E-07 | 1.4E-08 |
| WNW | 7.2E-07 | 7.2E-07 | 6.7E-07 | 1.5E-08 |
| NW | 7.1E-07 | 7.1E-07 | 6.6E-07 | 1.5E-08 |
| NNW | 6.8E-07 | 6.8E-07 | 6.3E-07 | 1.2E-08 |

Note: There are no values listed for the ENE, E, ESE and SE sectors because these sectors are directly towards Lake Erie.

**Table 2.7-90 Nearest Goat X/Q and D/Q Factors for Ground-Level Release (Based on 2002-2007 met data)**

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 2.7E-07 | 2.7E-07 | 2.2E-07 | 1.5E-09 |
| NNW | 1.7E-07 | 1.7E-07 | 1.3E-07 | 6.2E-10 |

## Table 2.7-91 Nearest Goat $\chi$/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted $\chi$/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted $\chi$/Q (sec/m$^3$) | 8.0 Day Decay, Depleted $\chi$/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 6.6E-08 | 6.5E-08 | 6.0E-08 | 8.4E-10 |
| NNW | 3.5E-08 | 3.5E-08 | 3.2E-08 | 3.0E-10 |

## Table 2.7-92 Nearest Goat X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)

| Sector | Distance (miles) | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|---|
| WNW | 2.21 | 5.7E-08 | 5.7E-08 | 5.1E-08 | 7.9E-10 |
| NNW | 2.99 | 3.0E-08 | 3.0E-08 | 2.7E-08 | 3.0E-10 |

## Table 2.7-93 Nearest Milk Cow X/Q and D/Q Factors for Ground-Level Release (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 3.1E-07 | 3.1E-07 | 2.5E-07 | 1.7E-09 |
| NW | 1.0E-07 | 1.0E-07 | 7.9E-08 | 4.7E-10 |

## Table 2.7-94 Nearest Milk Cow χ/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 7.2E-08 | 7.2E-08 | 6.6E-08 | 9.5E-10 |
| NW | 2.8E-08 | 2.7E-08 | 2.5E-08 | 2.8E-10 |

**Table 2.7-95 Nearest Milk Cow Χ/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)**

| Sector | No Decay, Undepleted Χ/Q ($sec/m^3$) | 2.26 Day Decay, Undepleted Χ/Q ($sec/m^3$) | 8.0 Day Decay, Depleted Χ/Q ($sec/m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| WNW | 6.2E-08 | 6.2E-08 | 5.6E-08 | 8.9E-10 |
| NW | 2.4E-08 | 2.4E-08 | 2.1E-08 | 2.7E-10 |

## Table 2.7-96 Annual Average Χ/Q Values (No Decay, Undepleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 1 of 3)

| | Annual Average Χ/Q ($sec/m^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 4.096E-05 | 1.188E-05 | 5.798E-06 | 2.761E-06 | 1.040E-06 | 5.456E-07 | 3.395E-07 | 2.341E-07 | 1.728E-07 | 1.339E-07 | 1.076E-07 |
| NNE | 6.801E-05 | 1.974E-05 | 9.639E-06 | 4.591E-06 | 1.728E-06 | 9.064E-07 | 5.639E-07 | 3.888E-07 | 2.870E-07 | 2.224E-07 | 1.786E-07 |
| NE | 1.148E-04 | 3.343E-05 | 1.621E-05 | 7.747E-06 | 2.938E-06 | 1.555E-06 | 9.749E-07 | 6.768E-07 | 5.027E-07 | 3.917E-07 | 3.162E-07 |
| ENE | 1.347E-04 | 3.915E-05 | 1.893E-05 | 9.055E-06 | 3.442E-06 | 1.825E-06 | 1.147E-06 | 7.972E-07 | 5.930E-07 | 4.627E-07 | 3.740E-07 |
| E | 1.255E-04 | 3.635E-05 | 1.753E-05 | 8.383E-06 | 3.190E-06 | 1.693E-06 | 1.065E-06 | 7.409E-07 | 5.516E-07 | 4.307E-07 | 3.484E-07 |
| ESE | 1.615E-04 | 4.668E-05 | 2.245E-05 | 1.075E-05 | 4.100E-06 | 2.182E-06 | 1.375E-06 | 9.584E-07 | 7.146E-07 | 5.587E-07 | 4.525E-07 |
| SE | 1.071E-04 | 3.100E-05 | 1.495E-05 | 7.149E-06 | 2.719E-06 | 1.443E-06 | 9.071E-07 | 6.313E-07 | 4.699E-07 | 3.669E-07 | 2.967E-07 |
| SSE | 7.788E-05 | 2.259E-05 | 1.092E-05 | 5.220E-06 | 1.982E-06 | 1.051E-06 | 6.596E-07 | 4.585E-07 | 3.410E-07 | 2.660E-07 | 2.149E-07 |
| S | 5.836E-05 | 1.696E-05 | 8.205E-06 | 3.923E-06 | 1.491E-06 | 7.900E-07 | 4.960E-07 | 3.448E-07 | 2.564E-07 | 2.000E-07 | 1.616E-07 |
| SSW | 4.414E-05 | 1.288E-05 | 6.263E-06 | 2.992E-06 | 1.133E-06 | 5.985E-07 | 3.747E-07 | 2.598E-07 | 1.928E-07 | 1.501E-07 | 1.210E-07 |
| SW | 2.330E-05 | 6.709E-06 | 3.284E-06 | 1.561E-06 | 5.814E-07 | 3.017E-07 | 1.858E-07 | 1.270E-07 | 9.297E-08 | 7.150E-08 | 5.705E-08 |
| WSW | 1.680E-05 | 4.797E-06 | 2.340E-06 | 1.110E-06 | 4.131E-07 | 2.143E-07 | 1.319E-07 | 9.013E-08 | 6.598E-08 | 5.075E-08 | 4.049E-08 |
| W | 1.891E-05 | 5.406E-06 | 2.634E-06 | 1.251E-06 | 4.682E-07 | 2.441E-07 | 1.510E-07 | 1.036E-07 | 7.614E-08 | 5.876E-08 | 4.703E-08 |
| WNW | 2.642E-05 | 7.499E-06 | 3.633E-06 | 1.725E-06 | 6.486E-07 | 3.398E-07 | 2.111E-07 | 1.454E-07 | 1.072E-07 | 8.298E-08 | 6.661E-08 |
| NW | 2.587E-05 | 7.292E-06 | 3.515E-06 | 1.668E-06 | 6.280E-07 | 3.296E-07 | 2.051E-07 | 1.415E-07 | 1.045E-07 | 8.100E-08 | 6.510E-08 |
| NNW | 2.956E-05 | 8.461E-06 | 4.103E-06 | 1.952E-06 | 7.363E-07 | 3.872E-07 | 2.414E-07 | 1.667E-07 | 1.233E-07 | 9.567E-08 | 7.696E-08 |

## Table 2.7-96 Annual Average X/Q Values (No Decay, Undepleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 2 of 3)

| | Annual Average X/Q (sec/m³) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| Sector | 5.0 | 7.5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| N | 8.888E-08 | 4.550E-08 | 2.948E-08 | 1.695E-08 | 1.151E-08 | 8.550E-09 | 6.715E-09 | 5.480E-09 | 4.599E-09 | 3.943E-09 | 3.437E-09 |
| NNE | 1.476E-07 | 7.553E-08 | 4.894E-08 | 2.813E-08 | 1.911E-08 | 1.419E-08 | 1.115E-08 | 9.099E-09 | 7.636E-09 | 6.546E-09 | 5.706E-09 |
| NE | 2.625E-07 | 1.369E-07 | 8.997E-08 | 5.276E-08 | 3.634E-08 | 2.729E-08 | 2.162E-08 | 1.778E-08 | 1.502E-08 | 1.295E-08 | 1.135E-08 |
| ENE | 3.107E-07 | 1.628E-07 | 1.073E-07 | 6.319E-08 | 4.365E-08 | 3.285E-08 | 2.609E-08 | 2.149E-08 | 1.818E-08 | 1.569E-08 | 1.376E-08 |
| E | 2.897E-07 | 1.522E-07 | 1.005E-07 | 5.943E-08 | 4.116E-08 | 3.104E-08 | 2.469E-08 | 2.037E-08 | 1.725E-08 | 1.491E-08 | 1.309E-08 |
| ESE | 3.766E-07 | 1.988E-07 | 1.317E-07 | 7.817E-08 | 5.430E-08 | 4.104E-08 | 3.271E-08 | 2.702E-08 | 2.292E-08 | 1.983E-08 | 1.743E-08 |
| SE | 2.467E-07 | 1.297E-07 | 8.565E-08 | 5.062E-08 | 3.506E-08 | 2.644E-08 | 2.103E-08 | 1.734E-08 | 1.469E-08 | 1.270E-08 | 1.115E-08 |
| SSE | 1.786E-07 | 9.355E-08 | 6.166E-08 | 3.633E-08 | 2.511E-08 | 1.890E-08 | 1.501E-08 | 1.237E-08 | 1.047E-08 | 9.038E-09 | 7.930E-09 |
| S | 1.342E-07 | 7.026E-08 | 4.628E-08 | 2.724E-08 | 1.881E-08 | 1.415E-08 | 1.124E-08 | 9.253E-09 | 7.827E-09 | 6.756E-09 | 5.926E-09 |
| SSW | 1.004E-07 | 5.218E-08 | 3.420E-08 | 1.998E-08 | 1.372E-08 | 1.028E-08 | 8.132E-09 | 6.677E-09 | 5.633E-09 | 4.851E-09 | 4.245E-09 |
| SW | 4.684E-08 | 2.340E-08 | 1.488E-08 | 8.335E-09 | 5.559E-09 | 4.071E-09 | 3.160E-09 | 2.554E-09 | 2.126E-09 | 1.809E-09 | 1.567E-09 |
| WSW | 3.325E-08 | 1.663E-08 | 1.059E-08 | 5.943E-09 | 3.971E-09 | 2.912E-09 | 2.264E-09 | 1.832E-09 | 1.527E-09 | 1.300E-09 | 1.127E-09 |
| W | 3.872E-08 | 1.957E-08 | 1.257E-08 | 7.132E-09 | 4.803E-09 | 3.544E-09 | 2.769E-09 | 2.251E-09 | 1.882E-09 | 1.608E-09 | 1.398E-09 |
| WNW | 5.499E-08 | 2.810E-08 | 1.819E-08 | 1.045E-08 | 7.101E-09 | 5.277E-09 | 4.148E-09 | 3.387E-09 | 2.845E-09 | 2.441E-09 | 2.129E-09 |
| NW | 5.383E-08 | 2.768E-08 | 1.800E-08 | 1.041E-08 | 7.111E-09 | 5.305E-09 | 4.183E-09 | 3.426E-09 | 2.884E-09 | 2.480E-09 | 2.167E-09 |
| NNW | 6.366E-08 | 3.278E-08 | 2.134E-08 | 1.235E-08 | 8.427E-09 | 6.283E-09 | 4.952E-09 | 4.053E-09 | 3.410E-09 | 2.930E-09 | 2.559E-09 |

## Table 2.7-96 Annual Average Χ/Q Values (No Decay, Undepleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 3 of 3)

Χ/Q (sec/m$^3$) for Each Segment

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.799E-06 | 1.203E-06 | 3.523E-07 | 1.755E-07 | 1.085E-07 | 4.802E-08 | 1.732E-08 | 8.606E-09 | 5.497E-09 | 3.950E-09 |
| NNE | 9.640E-06 | 1.999E-06 | 5.852E-07 | 2.914E-07 | 1.801E-07 | 7.972E-08 | 2.875E-08 | 1.429E-08 | 9.127E-09 | 6.558E-09 |
| NE | 1.628E-05 | 3.392E-06 | 1.010E-06 | 5.101E-07 | 3.187E-07 | 1.440E-07 | 5.373E-08 | 2.744E-08 | 1.783E-08 | 1.297E-08 |
| ENE | 1.903E-05 | 3.971E-06 | 1.188E-06 | 6.017E-07 | 3.768E-07 | 1.710E-07 | 6.431E-08 | 3.303E-08 | 2.154E-08 | 1.571E-08 |
| E | 1.765E-05 | 3.679E-06 | 1.103E-06 | 5.596E-07 | 3.510E-07 | 1.598E-07 | 6.045E-08 | 3.120E-08 | 2.042E-08 | 1.493E-08 |
| ESE | 2.263E-05 | 4.725E-06 | 1.423E-06 | 7.249E-07 | 4.559E-07 | 2.085E-07 | 7.945E-08 | 4.124E-08 | 2.708E-08 | 1.986E-08 |
| SE | 1.505E-05 | 3.136E-06 | 9.397E-07 | 4.768E-07 | 2.990E-07 | 1.361E-07 | 5.149E-08 | 2.657E-08 | 1.739E-08 | 1.271E-08 |
| SSE | 1.098E-05 | 2.288E-06 | 6.834E-07 | 3.460E-07 | 2.166E-07 | 9.827E-08 | 3.697E-08 | 1.900E-08 | 1.240E-08 | 9.051E-09 |
| S | 8.247E-06 | 1.720E-06 | 5.139E-07 | 2.602E-07 | 1.628E-07 | 7.382E-08 | 2.772E-08 | 1.423E-08 | 9.276E-09 | 6.766E-09 |
| SSW | 6.280E-06 | 1.308E-06 | 3.884E-07 | 1.957E-07 | 1.220E-07 | 5.490E-08 | 2.036E-08 | 1.034E-08 | 6.695E-09 | 4.858E-09 |
| SW | 3.279E-06 | 6.747E-07 | 1.932E-07 | 9.451E-08 | 5.755E-08 | 2.482E-08 | 8.557E-09 | 4.103E-09 | 2.564E-09 | 1.813E-09 |
| WSW | 2.339E-06 | 4.796E-07 | 1.372E-07 | 6.708E-08 | 4.085E-08 | 1.764E-08 | 6.099E-09 | 2.936E-09 | 1.839E-09 | 1.303E-09 |
| W | 2.635E-06 | 5.426E-07 | 1.569E-07 | 7.737E-08 | 4.743E-08 | 2.071E-08 | 7.305E-09 | 3.570E-09 | 2.258E-09 | 1.612E-09 |
| WNW | 3.644E-06 | 7.507E-07 | 2.191E-07 | 1.089E-07 | 6.716E-08 | 2.967E-08 | 1.068E-08 | 5.312E-09 | 3.398E-09 | 2.445E-09 |
| NW | 3.533E-06 | 7.265E-07 | 2.128E-07 | 1.061E-07 | 6.564E-08 | 2.919E-08 | 1.063E-08 | 5.338E-09 | 3.436E-09 | 2.484E-09 |
| NNW | 4.115E-06 | 8.513E-07 | 2.504E-07 | 1.252E-07 | 7.758E-08 | 3.456E-08 | 1.260E-08 | 6.322E-09 | 4.065E-09 | 2.934E-09 |

## Table 2.7-97 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 1 of 3)

| | Annual Average X/Q (sec/m³) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| Sector | 0.25 | 0.5 | 0.75 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 |
| N | 4.091E-05 | 1.185E-05 | 5.777E-06 | 2.748E-06 | 1.032E-06 | 5.403E-07 | 3.354E-07 | 2.307E-07 | 1.699E-07 | 1.313E-07 | 1.052E-07 |
| NNE | 6.794E-05 | 1.970E-05 | 9.608E-06 | 4.571E-06 | 1.716E-06 | 8.985E-07 | 5.578E-07 | 3.837E-07 | 2.826E-07 | 2.185E-07 | 1.751E-07 |
| NE | 1.147E-04 | 3.334E-05 | 1.615E-05 | 7.708E-06 | 2.916E-06 | 1.539E-06 | 9.624E-07 | 6.664E-07 | 4.937E-07 | 3.836E-07 | 3.089E-07 |
| ENE | 1.345E-04 | 3.902E-05 | 1.885E-05 | 8.999E-06 | 3.410E-06 | 1.803E-06 | 1.129E-06 | 7.824E-07 | 5.801E-07 | 4.512E-07 | 3.635E-07 |
| E | 1.253E-04 | 3.622E-05 | 1.744E-05 | 8.325E-06 | 3.156E-06 | 1.669E-06 | 1.046E-06 | 7.254E-07 | 5.381E-07 | 4.186E-07 | 3.374E-07 |
| ESE | 1.612E-04 | 4.652E-05 | 2.233E-05 | 1.067E-05 | 4.057E-06 | 2.151E-06 | 1.350E-06 | 9.382E-07 | 6.971E-07 | 5.431E-07 | 4.383E-07 |
| SE | 1.069E-04 | 3.090E-05 | 1.488E-05 | 7.103E-06 | 2.693E-06 | 1.424E-06 | 8.926E-07 | 6.191E-07 | 4.594E-07 | 3.575E-07 | 2.882E-07 |
| SSE | 7.777E-05 | 2.253E-05 | 1.088E-05 | 5.192E-06 | 1.966E-06 | 1.039E-06 | 6.507E-07 | 4.511E-07 | 3.345E-07 | 2.602E-07 | 2.097E-07 |
| S | 5.828E-05 | 1.692E-05 | 8.175E-06 | 3.904E-06 | 1.480E-06 | 7.824E-07 | 4.900E-07 | 3.398E-07 | 2.520E-07 | 1.961E-07 | 1.581E-07 |
| SSW | 4.409E-05 | 1.285E-05 | 6.240E-06 | 2.977E-06 | 1.124E-06 | 5.926E-07 | 3.701E-07 | 2.559E-07 | 1.894E-07 | 1.471E-07 | 1.183E-07 |
| SW | 2.328E-05 | 6.696E-06 | 3.275E-06 | 1.555E-06 | 5.781E-07 | 2.994E-07 | 1.841E-07 | 1.255E-07 | 9.172E-08 | 7.040E-08 | 5.606E-08 |
| WSW | 1.679E-05 | 4.789E-06 | 2.335E-06 | 1.107E-06 | 4.113E-07 | 2.130E-07 | 1.310E-07 | 8.932E-08 | 6.529E-08 | 5.014E-08 | 3.994E-08 |
| W | 1.890E-05 | 5.398E-06 | 2.628E-06 | 1.247E-06 | 4.661E-07 | 2.427E-07 | 1.499E-07 | 1.027E-07 | 7.533E-08 | 5.805E-08 | 4.639E-08 |
| WNW | 2.639E-05 | 7.486E-06 | 3.623E-06 | 1.720E-06 | 6.453E-07 | 3.375E-07 | 2.093E-07 | 1.439E-07 | 1.059E-07 | 8.184E-08 | 6.558E-08 |
| NW | 2.585E-05 | 7.280E-06 | 3.507E-06 | 1.663E-06 | 6.250E-07 | 3.275E-07 | 2.035E-07 | 1.402E-07 | 1.034E-07 | 8.001E-08 | 6.420E-08 |
| NNW | 2.953E-05 | 8.443E-06 | 4.090E-06 | 1.944E-06 | 7.316E-07 | 3.840E-07 | 2.389E-07 | 1.646E-07 | 1.215E-07 | 9.408E-08 | 7.552E-08 |

## Table 2.7-97 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 2 of 3)

| | Annual Average X/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5.0** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 8.674E-08 | 4.387E-08 | 2.808E-08 | 1.576E-08 | 1.046E-08 | 7.590E-09 | 5.828E-09 | 4.652E-09 | 3.820E-09 | 3.205E-09 | 2.735E-09 |
| NNE | 1.443E-07 | 7.308E-08 | 4.683E-08 | 2.635E-08 | 1.752E-08 | 1.274E-08 | 9.806E-09 | 7.843E-09 | 6.453E-09 | 5.425E-09 | 4.639E-09 |
| NE | 2.557E-07 | 1.317E-07 | 8.540E-08 | 4.881E-08 | 3.278E-08 | 2.400E-08 | 1.856E-08 | 1.490E-08 | 1.229E-08 | 1.035E-08 | 8.860E-09 |
| ENE | 3.011E-07 | 1.553E-07 | 1.008E-07 | 5.754E-08 | 3.856E-08 | 2.816E-08 | 2.171E-08 | 1.737E-08 | 1.428E-08 | 1.199E-08 | 1.023E-08 |
| E | 2.796E-07 | 1.443E-07 | 9.366E-08 | 5.346E-08 | 3.578E-08 | 2.608E-08 | 2.006E-08 | 1.601E-08 | 1.313E-08 | 1.099E-08 | 9.348E-09 |
| ESE | 3.635E-07 | 1.885E-07 | 1.227E-07 | 7.034E-08 | 4.722E-08 | 3.451E-08 | 2.661E-08 | 2.128E-08 | 1.748E-08 | 1.465E-08 | 1.248E-08 |
| SE | 2.388E-07 | 1.235E-07 | 8.028E-08 | 4.596E-08 | 3.085E-08 | 2.256E-08 | 1.741E-08 | 1.394E-08 | 1.146E-08 | 9.624E-09 | 8.211E-09 |
| SSE | 1.738E-07 | 8.981E-08 | 5.839E-08 | 3.349E-08 | 2.254E-08 | 1.654E-08 | 1.280E-08 | 1.029E-08 | 8.491E-09 | 7.154E-09 | 6.126E-09 |
| S | 1.310E-07 | 6.773E-08 | 4.407E-08 | 2.533E-08 | 1.709E-08 | 1.256E-08 | 9.751E-09 | 7.854E-09 | 6.499E-09 | 5.490E-09 | 4.714E-09 |
| SSW | 9.788E-08 | 5.025E-08 | 3.252E-08 | 1.854E-08 | 1.243E-08 | 9.091E-09 | 7.026E-09 | 5.638E-09 | 4.650E-09 | 3.916E-09 | 3.353E-09 |
| SW | 4.594E-08 | 2.272E-08 | 1.431E-08 | 7.857E-09 | 5.138E-09 | 3.690E-09 | 2.810E-09 | 2.229E-09 | 1.820E-09 | 1.521E-09 | 1.293E-09 |
| WSW | 3.275E-08 | 1.625E-08 | 1.027E-08 | 5.678E-09 | 3.737E-09 | 2.700E-09 | 2.068E-09 | 1.649E-09 | 1.354E-09 | 1.137E-09 | 9.713E-10 |
| W | 3.814E-08 | 1.913E-08 | 1.219E-08 | 6.815E-09 | 4.521E-09 | 3.288E-09 | 2.532E-09 | 2.028E-09 | 1.672E-09 | 1.409E-09 | 1.208E-09 |
| WNW | 5.404E-08 | 2.738E-08 | 1.757E-08 | 9.924E-09 | 6.630E-09 | 4.846E-09 | 3.747E-09 | 3.011E-09 | 2.489E-09 | 2.101E-09 | 1.805E-09 |
| NW | 5.300E-08 | 2.705E-08 | 1.746E-08 | 9.947E-09 | 6.691E-09 | 4.918E-09 | 3.822E-09 | 3.085E-09 | 2.560E-09 | 2.169E-09 | 1.869E-09 |
| NNW | 6.234E-08 | 3.177E-08 | 2.046E-08 | 1.160E-08 | 7.763E-09 | 5.676E-09 | 4.388E-09 | 3.524E-09 | 2.910E-09 | 2.455E-09 | 2.106E-09 |

## Table 2.7-97 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 3 of 3)

X/Q ($sec/m^3$) for Each Segment

Segment Boundaries in Miles from the Site

| Sector | 0.5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
|---|---|---|---|---|---|---|---|---|---|---|
| N | 5.780E-06 | 1.195E-06 | 3.481E-07 | 1.726E-07 | 1.061E-07 | 4.638E-08 | 1.614E-08 | 7.650E-09 | 4.671E-09 | 3.213E-09 |
| NNE | 9.611E-06 | 1.987E-06 | 5.790E-07 | 2.871E-07 | 1.766E-07 | 7.725E-08 | 2.698E-08 | 1.284E-08 | 7.875E-09 | 5.439E-09 |
| NE | 1.622E-05 | 3.369E-06 | 9.977E-07 | 5.011E-07 | 3.114E-07 | 1.387E-07 | 4.982E-08 | 2.416E-08 | 1.495E-08 | 1.037E-08 |
| ENE | 1.895E-05 | 3.938E-06 | 1.170E-06 | 5.888E-07 | 3.664E-07 | 1.635E-07 | 5.871E-08 | 2.835E-08 | 1.744E-08 | 1.201E-08 |
| E | 1.756E-05 | 3.644E-06 | 1.084E-06 | 5.461E-07 | 3.401E-07 | 1.519E-07 | 5.453E-08 | 2.626E-08 | 1.607E-08 | 1.102E-08 |
| ESE | 2.252E-05 | 4.680E-06 | 1.399E-06 | 7.073E-07 | 4.416E-07 | 1.981E-07 | 7.170E-08 | 3.474E-08 | 2.135E-08 | 1.469E-08 |
| SE | 1.498E-05 | 3.109E-06 | 9.250E-07 | 4.662E-07 | 2.904E-07 | 1.299E-07 | 4.687E-08 | 2.271E-08 | 1.399E-08 | 9.646E-09 |
| SSE | 1.094E-05 | 2.271E-06 | 6.745E-07 | 3.395E-07 | 2.114E-07 | 9.450E-08 | 3.416E-08 | 1.665E-08 | 1.032E-08 | 7.169E-09 |
| S | 8.219E-06 | 1.709E-06 | 5.079E-07 | 2.558E-07 | 1.593E-07 | 7.128E-08 | 2.583E-08 | 1.264E-08 | 7.880E-09 | 5.502E-09 |
| SSW | 6.258E-06 | 1.300E-06 | 3.838E-07 | 1.923E-07 | 1.193E-07 | 5.295E-08 | 1.893E-08 | 9.154E-09 | 5.658E-09 | 3.925E-09 |
| SW | 3.270E-06 | 6.713E-07 | 1.914E-07 | 9.325E-08 | 5.656E-08 | 2.414E-08 | 8.082E-09 | 3.724E-09 | 2.239E-09 | 1.525E-09 |
| WSW | 2.335E-06 | 4.777E-07 | 1.362E-07 | 6.639E-08 | 4.030E-08 | 1.726E-08 | 5.836E-09 | 2.724E-09 | 1.656E-09 | 1.140E-09 |
| W | 2.630E-06 | 5.404E-07 | 1.557E-07 | 7.656E-08 | 4.678E-08 | 2.027E-08 | 6.990E-09 | 3.314E-09 | 2.036E-09 | 1.412E-09 |
| WNW | 3.636E-06 | 7.472E-07 | 2.173E-07 | 1.076E-07 | 6.612E-08 | 2.894E-08 | 1.016E-08 | 4.882E-09 | 3.022E-09 | 2.106E-09 |
| NW | 3.526E-06 | 7.235E-07 | 2.113E-07 | 1.050E-07 | 6.474E-08 | 2.855E-08 | 1.017E-08 | 4.952E-09 | 3.095E-09 | 2.174E-09 |
| NNW | 4.103E-06 | 8.465E-07 | 2.479E-07 | 1.234E-07 | 7.614E-08 | 3.354E-08 | 1.186E-08 | 5.717E-09 | 3.537E-09 | 2.461E-09 |

## Table 2.7-98 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 1 of 3)

| Annual Average X/Q ($sec/m^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 3.875E-05 | 1.084E-05 | 5.162E-06 | 2.414E-06 | 8.810E-07 | 4.505E-07 | 2.740E-07 | 1.852E-07 | 1.342E-07 | 1.022E-07 | 8.084E-08 |
| NNE | 6.435E-05 | 1.802E-05 | 8.582E-06 | 4.014E-06 | 1.464E-06 | 7.487E-07 | 4.554E-07 | 3.077E-07 | 2.230E-07 | 1.698E-07 | 1.343E-07 |
| NE | 1.086E-04 | 3.050E-05 | 1.443E-05 | 6.772E-06 | 2.490E-06 | 1.284E-06 | 7.868E-07 | 5.352E-07 | 3.902E-07 | 2.989E-07 | 2.375E-07 |
| ENE | 1.275E-04 | 3.572E-05 | 1.685E-05 | 7.912E-06 | 2.916E-06 | 1.506E-06 | 9.246E-07 | 6.299E-07 | 4.599E-07 | 3.526E-07 | 2.805E-07 |
| E | 1.187E-04 | 3.316E-05 | 1.560E-05 | 7.324E-06 | 2.701E-06 | 1.396E-06 | 8.580E-07 | 5.850E-07 | 4.274E-07 | 3.280E-07 | 2.610E-07 |
| ESE | 1.528E-04 | 4.259E-05 | 1.998E-05 | 9.390E-06 | 3.472E-06 | 1.799E-06 | 1.108E-06 | 7.567E-07 | 5.537E-07 | 4.255E-07 | 3.390E-07 |
| SE | 1.013E-04 | 2.829E-05 | 1.330E-05 | 6.246E-06 | 2.303E-06 | 1.190E-06 | 7.314E-07 | 4.987E-07 | 3.643E-07 | 2.796E-07 | 2.225E-07 |
| SSE | 7.367E-05 | 2.062E-05 | 9.720E-06 | 4.562E-06 | 1.680E-06 | 8.673E-07 | 5.323E-07 | 3.625E-07 | 2.646E-07 | 2.029E-07 | 1.614E-07 |
| S | 5.521E-05 | 1.547E-05 | 7.304E-06 | 3.429E-06 | 1.263E-06 | 6.524E-07 | 4.004E-07 | 2.727E-07 | 1.991E-07 | 1.527E-07 | 1.214E-07 |
| SSW | 4.176E-05 | 1.175E-05 | 5.575E-06 | 2.615E-06 | 9.601E-07 | 4.942E-07 | 3.025E-07 | 2.055E-07 | 1.497E-07 | 1.145E-07 | 9.092E-08 |
| SW | 2.205E-05 | 6.123E-06 | 2.924E-06 | 1.365E-06 | 4.930E-07 | 2.493E-07 | 1.501E-07 | 1.005E-07 | 7.226E-08 | 5.465E-08 | 4.292E-08 |
| WSW | 1.590E-05 | 4.378E-06 | 2.084E-06 | 9.708E-07 | 3.504E-07 | 1.772E-07 | 1.067E-07 | 7.141E-08 | 5.133E-08 | 3.882E-08 | 3.050E-08 |
| W | 1.789E-05 | 4.935E-06 | 2.346E-06 | 1.094E-06 | 3.971E-07 | 2.018E-07 | 1.221E-07 | 8.208E-08 | 5.923E-08 | 4.495E-08 | 3.542E-08 |
| WNW | 2.500E-05 | 6.845E-06 | 3.235E-06 | 1.509E-06 | 5.500E-07 | 2.808E-07 | 1.706E-07 | 1.151E-07 | 8.336E-08 | 6.345E-08 | 5.014E-08 |
| NW | 2.448E-05 | 6.656E-06 | 3.130E-06 | 1.459E-06 | 5.326E-07 | 2.724E-07 | 1.658E-07 | 1.121E-07 | 8.128E-08 | 6.196E-08 | 4.903E-08 |
| NNW | 2.797E-05 | 7.722E-06 | 3.653E-06 | 1.707E-06 | 6.242E-07 | 3.199E-07 | 1.949E-07 | 1.320E-07 | 9.580E-08 | 7.309E-08 | 5.788E-08 |

## Table 2.7-98 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 2 of 3)

**Annual Average X/Q (sec/m$^3$)**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **5.0** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 6.579E-08 | 3.174E-08 | 1.953E-08 | 1.032E-08 | 6.537E-09 | 4.568E-09 | 3.396E-09 | 2.635E-09 | 2.109E-09 | 1.729E-09 | 1.445E-09 |
| NNE | 1.093E-07 | 5.275E-08 | 3.246E-08 | 1.716E-08 | 1.088E-08 | 7.608E-09 | 5.660E-09 | 4.395E-09 | 3.521E-09 | 2.888E-09 | 2.415E-09 |
| NE | 1.942E-07 | 9.546E-08 | 5.955E-08 | 3.208E-08 | 2.059E-08 | 1.454E-08 | 1.090E-08 | 8.516E-09 | 6.857E-09 | 5.651E-09 | 4.742E-09 |
| ENE | 2.296E-07 | 1.132E-07 | 7.079E-08 | 3.824E-08 | 2.459E-08 | 1.738E-08 | 1.303E-08 | 1.018E-08 | 8.201E-09 | 6.757E-09 | 5.669E-09 |
| E | 2.137E-07 | 1.057E-07 | 6.619E-08 | 3.584E-08 | 2.308E-08 | 1.633E-08 | 1.225E-08 | 9.578E-09 | 7.715E-09 | 6.357E-09 | 5.333E-09 |
| ESE | 2.779E-07 | 1.380E-07 | 8.669E-08 | 4.715E-08 | 3.045E-08 | 2.159E-08 | 1.623E-08 | 1.271E-08 | 1.025E-08 | 8.459E-09 | 7.104E-09 |
| SE | 1.822E-07 | 9.014E-08 | 5.648E-08 | 3.061E-08 | 1.973E-08 | 1.396E-08 | 1.049E-08 | 8.206E-09 | 6.615E-09 | 5.455E-09 | 4.580E-09 |
| SSE | 1.321E-07 | 6.519E-08 | 4.078E-08 | 2.207E-08 | 1.421E-08 | 1.006E-08 | 7.555E-09 | 5.913E-09 | 4.768E-09 | 3.935E-09 | 3.306E-09 |
| S | 9.937E-08 | 4.902E-08 | 3.066E-08 | 1.658E-08 | 1.068E-08 | 7.562E-09 | 5.682E-09 | 4.449E-09 | 3.590E-09 | 2.963E-09 | 2.491E-09 |
| SSW | 7.428E-08 | 3.639E-08 | 2.264E-08 | 1.216E-08 | 7.785E-09 | 5.486E-09 | 4.106E-09 | 3.204E-09 | 2.578E-09 | 2.123E-09 | 1.780E-09 |
| SW | 3.472E-08 | 1.635E-08 | 9.887E-09 | 5.095E-09 | 3.173E-09 | 2.189E-09 | 1.610E-09 | 1.239E-09 | 9.843E-10 | 8.019E-10 | 6.662E-10 |
| WSW | 2.468E-08 | 1.165E-08 | 7.053E-09 | 3.647E-09 | 2.279E-09 | 1.577E-09 | 1.163E-09 | 8.971E-10 | 7.147E-10 | 5.837E-10 | 4.861E-10 |
| W | 2.874E-08 | 1.371E-08 | 8.369E-09 | 4.378E-09 | 2.757E-09 | 1.919E-09 | 1.423E-09 | 1.102E-09 | 8.816E-10 | 7.224E-10 | 6.034E-10 |
| WNW | 4.079E-08 | 1.966E-08 | 1.210E-08 | 6.403E-09 | 4.065E-09 | 2.848E-09 | 2.123E-09 | 1.652E-09 | 1.326E-09 | 1.090E-09 | 9.134E-10 |
| NW | 3.995E-08 | 1.938E-08 | 1.199E-08 | 6.391E-09 | 4.081E-09 | 2.872E-09 | 2.150E-09 | 1.678E-09 | 1.351E-09 | 1.114E-09 | 9.355E-10 |
| NNW | 4.717E-08 | 2.290E-08 | 1.416E-08 | 7.541E-09 | 4.805E-09 | 3.375E-09 | 2.520E-09 | 1.963E-09 | 1.577E-09 | 1.297E-09 | 1.087E-09 |

## Table 2.7-98 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Ground Level Release (Based on 2001-2007 met data) (Sheet 3 of 3)

X/Q (sec/m$^3$) for Each Segment

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.202E-06 | 1.030E-06 | 2.855E-07 | 1.366E-07 | 8.161E-08 | 3.388E-08 | 1.069E-08 | 4.624E-09 | 2.652E-09 | 1.736E-09 |
| NNE | 8.648E-06 | 1.713E-06 | 4.745E-07 | 2.269E-07 | 1.356E-07 | 5.630E-08 | 1.777E-08 | 7.702E-09 | 4.423E-09 | 2.900E-09 |
| NE | 1.460E-05 | 2.905E-06 | 8.187E-07 | 3.969E-07 | 2.397E-07 | 1.014E-07 | 3.308E-08 | 1.470E-08 | 8.565E-09 | 5.672E-09 |
| ENE | 1.707E-05 | 3.400E-06 | 9.618E-07 | 4.676E-07 | 2.830E-07 | 1.202E-07 | 3.941E-08 | 1.756E-08 | 1.024E-08 | 6.782E-09 |
| E | 1.582E-05 | 3.148E-06 | 8.924E-07 | 4.345E-07 | 2.633E-07 | 1.121E-07 | 3.691E-08 | 1.650E-08 | 9.632E-09 | 6.380E-09 |
| ESE | 2.030E-05 | 4.044E-06 | 1.152E-06 | 5.628E-07 | 3.420E-07 | 1.463E-07 | 4.851E-08 | 2.181E-08 | 1.278E-08 | 8.489E-09 |
| SE | 1.350E-05 | 2.685E-06 | 7.607E-07 | 3.704E-07 | 2.245E-07 | 9.564E-08 | 3.152E-08 | 1.411E-08 | 8.252E-09 | 5.475E-09 |
| SSE | 9.849E-06 | 1.959E-06 | 5.537E-07 | 2.691E-07 | 1.628E-07 | 6.920E-08 | 2.273E-08 | 1.016E-08 | 5.946E-09 | 3.949E-09 |
| S | 7.398E-06 | 1.473E-06 | 4.165E-07 | 2.025E-07 | 1.225E-07 | 5.205E-08 | 1.709E-08 | 7.642E-09 | 4.474E-09 | 2.974E-09 |
| SSW | 5.633E-06 | 1.121E-06 | 3.148E-07 | 1.522E-07 | 9.175E-08 | 3.870E-08 | 1.254E-08 | 5.547E-09 | 3.223E-09 | 2.131E-09 |
| SW | 2.942E-06 | 5.784E-07 | 1.567E-07 | 7.363E-08 | 4.336E-08 | 1.756E-08 | 5.306E-09 | 2.220E-09 | 1.248E-09 | 8.057E-10 |
| WSW | 2.099E-06 | 4.113E-07 | 1.114E-07 | 5.230E-08 | 3.081E-08 | 1.250E-08 | 3.796E-09 | 1.599E-09 | 9.037E-10 | 5.864E-10 |
| W | 2.365E-06 | 4.652E-07 | 1.273E-07 | 6.032E-08 | 3.577E-08 | 1.468E-08 | 4.544E-09 | 1.944E-09 | 1.110E-09 | 7.255E-10 |
| WNW | 3.270E-06 | 6.435E-07 | 1.778E-07 | 8.485E-08 | 5.062E-08 | 2.100E-08 | 6.630E-09 | 2.883E-09 | 1.663E-09 | 1.095E-09 |
| NW | 3.171E-06 | 6.228E-07 | 1.727E-07 | 8.272E-08 | 4.950E-08 | 2.067E-08 | 6.608E-09 | 2.906E-09 | 1.688E-09 | 1.118E-09 |
| NNW | 3.692E-06 | 7.295E-07 | 2.031E-07 | 9.748E-08 | 5.842E-08 | 2.441E-08 | 7.797E-09 | 3.414E-09 | 1.975E-09 | 1.302E-09 |

## Table 2.7-99 Annual Average D/Q Values for Ground Level Release (Based on 2001-2007 met data) (Sheet 1 of 3)

| Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 1.265E-07 | 4.279E-08 | 2.197E-08 | 1.045E-08 | 3.752E-09 | 1.861E-09 | 1.096E-09 | 7.174E-10 | 5.048E-10 | 3.741E-10 | 2.883E-10 |
| NNE | 2.385E-07 | 8.064E-08 | 4.141E-08 | 1.969E-08 | 7.071E-09 | 3.507E-09 | 2.065E-09 | 1.352E-09 | 9.513E-10 | 7.050E-10 | 5.433E-10 |
| NE | 2.472E-07 | 8.360E-08 | 4.292E-08 | 2.041E-08 | 7.330E-09 | 3.635E-09 | 2.140E-09 | 1.402E-09 | 9.862E-10 | 7.308E-10 | 5.632E-10 |
| ENE | 2.009E-07 | 6.795E-08 | 3.489E-08 | 1.659E-08 | 5.958E-09 | 2.954E-09 | 1.740E-09 | 1.139E-09 | 8.015E-10 | 5.940E-10 | 4.578E-10 |
| E | 1.646E-07 | 5.566E-08 | 2.858E-08 | 1.359E-08 | 4.880E-09 | 2.420E-09 | 1.425E-09 | 9.331E-10 | 6.566E-10 | 4.866E-10 | 3.750E-10 |
| ESE | 1.879E-07 | 6.354E-08 | 3.262E-08 | 1.551E-08 | 5.571E-09 | 2.763E-09 | 1.627E-09 | 1.065E-09 | 7.495E-10 | 5.555E-10 | 4.281E-10 |
| SE | 1.508E-07 | 5.099E-08 | 2.618E-08 | 1.245E-08 | 4.471E-09 | 2.217E-09 | 1.306E-09 | 8.549E-10 | 6.016E-10 | 4.458E-10 | 3.435E-10 |
| SSE | 1.345E-07 | 4.549E-08 | 2.335E-08 | 1.110E-08 | 3.988E-09 | 1.978E-09 | 1.165E-09 | 7.626E-10 | 5.366E-10 | 3.977E-10 | 3.064E-10 |
| S | 1.077E-07 | 3.641E-08 | 1.870E-08 | 8.888E-09 | 3.193E-09 | 1.583E-09 | 9.323E-10 | 6.105E-10 | 4.296E-10 | 3.183E-10 | 2.453E-10 |
| SSW | 8.994E-08 | 3.042E-08 | 1.562E-08 | 7.424E-09 | 2.667E-09 | 1.323E-09 | 7.787E-10 | 5.099E-10 | 3.588E-10 | 2.659E-10 | 2.049E-10 |
| SW | 1.059E-07 | 3.580E-08 | 1.838E-08 | 8.739E-09 | 3.139E-09 | 1.557E-09 | 9.166E-10 | 6.002E-10 | 4.223E-10 | 3.130E-10 | 2.412E-10 |
| WSW | 9.700E-08 | 3.280E-08 | 1.684E-08 | 8.007E-09 | 2.876E-09 | 1.426E-09 | 8.399E-10 | 5.499E-10 | 3.870E-10 | 2.868E-10 | 2.210E-10 |
| W | 1.075E-07 | 3.637E-08 | 1.867E-08 | 8.877E-09 | 3.189E-09 | 1.581E-09 | 9.311E-10 | 6.097E-10 | 4.290E-10 | 3.179E-10 | 2.450E-10 |
| WNW | 1.274E-07 | 4.308E-08 | 2.212E-08 | 1.052E-08 | 3.778E-09 | 1.873E-09 | 1.103E-09 | 7.223E-10 | 5.082E-10 | 3.767E-10 | 2.903E-10 |
| NW | 1.214E-07 | 4.105E-08 | 2.108E-08 | 1.002E-08 | 3.599E-09 | 1.785E-09 | 1.051E-09 | 6.882E-10 | 4.842E-10 | 3.589E-10 | 2.765E-10 |
| NNW | 1.082E-07 | 3.660E-08 | 1.879E-08 | 8.933E-09 | 3.209E-09 | 1.591E-09 | 9.370E-10 | 6.135E-10 | 4.317E-10 | 3.199E-10 | 2.466E-10 |

## Table 2.7-99 Annual Average D/Q Values for Ground Level Release (Based on 2001-2007 met data) (Sheet 2 of 3)

Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 5.0 | 7.5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| N | 2.290E-10 | 1.017E-10 | 6.163E-11 | 3.115E-11 | 1.886E-11 | 1.264E-11 | 9.059E-12 | 6.802E-12 | 5.289E-12 | 4.225E-12 | 3.448E-12 |
| NNE | 4.316E-10 | 1.917E-10 | 1.161E-10 | 5.871E-11 | 3.553E-11 | 2.382E-11 | 1.707E-11 | 1.282E-11 | 9.967E-12 | 7.961E-12 | 6.498E-12 |
| NE | 4.474E-10 | 1.988E-10 | 1.204E-10 | 6.086E-11 | 3.683E-11 | 2.470E-11 | 1.770E-11 | 1.329E-11 | 1.033E-11 | 8.253E-12 | 6.736E-12 |
| ENE | 3.637E-10 | 1.616E-10 | 9.786E-11 | 4.946E-11 | 2.994E-11 | 2.007E-11 | 1.438E-11 | 1.080E-11 | 8.397E-12 | 6.708E-12 | 5.475E-12 |
| E | 2.979E-10 | 1.323E-10 | 8.017E-11 | 4.052E-11 | 2.452E-11 | 1.644E-11 | 1.178E-11 | 8.847E-12 | 6.879E-12 | 5.495E-12 | 4.485E-12 |
| ESE | 3.401E-10 | 1.511E-10 | 9.151E-11 | 4.626E-11 | 2.800E-11 | 1.877E-11 | 1.345E-11 | 1.010E-11 | 7.853E-12 | 6.273E-12 | 5.120E-12 |
| SE | 2.729E-10 | 1.212E-10 | 7.344E-11 | 3.712E-11 | 2.247E-11 | 1.506E-11 | 1.079E-11 | 8.106E-12 | 6.302E-12 | 5.034E-12 | 4.109E-12 |
| SSE | 2.434E-10 | 1.081E-10 | 6.551E-11 | 3.311E-11 | 2.004E-11 | 1.344E-11 | 9.629E-12 | 7.230E-12 | 5.622E-12 | 4.491E-12 | 3.665E-12 |
| S | 1.949E-10 | 8.658E-11 | 5.244E-11 | 2.651E-11 | 1.604E-11 | 1.076E-11 | 7.708E-12 | 5.788E-12 | 4.500E-12 | 3.595E-12 | 2.934E-12 |
| SSW | 1.628E-10 | 7.232E-11 | 4.381E-11 | 2.214E-11 | 1.340E-11 | 8.985E-12 | 6.438E-12 | 4.835E-12 | 3.759E-12 | 3.003E-12 | 2.451E-12 |
| SW | 1.916E-10 | 8.512E-11 | 5.156E-11 | 2.606E-11 | 1.577E-11 | 1.058E-11 | 7.578E-12 | 5.691E-12 | 4.425E-12 | 3.534E-12 | 2.885E-12 |
| WSW | 1.756E-10 | 7.799E-11 | 4.724E-11 | 2.388E-11 | 1.445E-11 | 9.690E-12 | 6.944E-12 | 5.214E-12 | 4.054E-12 | 3.238E-12 | 2.643E-12 |
| W | 1.946E-10 | 8.647E-11 | 5.238E-11 | 2.647E-11 | 1.602E-11 | 1.074E-11 | 7.698E-12 | 5.781E-12 | 4.495E-12 | 3.590E-12 | 2.930E-12 |
| WNW | 2.306E-10 | 1.024E-10 | 6.205E-11 | 3.136E-11 | 1.898E-11 | 1.273E-11 | 9.120E-12 | 6.848E-12 | 5.325E-12 | 4.253E-12 | 3.472E-12 |
| NW | 2.197E-10 | 9.760E-11 | 5.912E-11 | 2.988E-11 | 1.809E-11 | 1.213E-11 | 8.689E-12 | 6.525E-12 | 5.073E-12 | 4.052E-12 | 3.308E-12 |
| NNW | 1.959E-10 | 8.701E-11 | 5.271E-11 | 2.664E-11 | 1.612E-11 | 1.081E-11 | 7.747E-12 | 5.817E-12 | 4.523E-12 | 3.613E-12 | 2.949E-12 |

## Table 2.7-99 Annual Average D/Q Values for Ground Level Release (Based on 2001-2007 met data) (Sheet 3 of 3)

| Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 2.148E-08 | 4.399E-09 | 1.148E-09 | 5.158E-10 | 2.918E-10 | 1.122E-10 | 3.246E-11 | 1.287E-11 | 6.870E-12 | 4.252E-12 |
| NNE | 4.047E-08 | 8.290E-09 | 2.164E-09 | 9.720E-10 | 5.499E-10 | 2.115E-10 | 6.117E-11 | 2.425E-11 | 1.295E-11 | 8.014E-12 |
| NE | 4.195E-08 | 8.594E-09 | 2.243E-09 | 1.008E-09 | 5.700E-10 | 2.192E-10 | 6.341E-11 | 2.513E-11 | 1.342E-11 | 8.307E-12 |
| ENE | 3.410E-08 | 6.985E-09 | 1.823E-09 | 8.189E-10 | 4.633E-10 | 1.782E-10 | 5.154E-11 | 2.043E-11 | 1.091E-11 | 6.752E-12 |
| E | 2.793E-08 | 5.722E-09 | 1.494E-09 | 6.708E-10 | 3.795E-10 | 1.459E-10 | 4.222E-11 | 1.673E-11 | 8.936E-12 | 5.531E-12 |
| ESE | 3.189E-08 | 6.532E-09 | 1.705E-09 | 7.658E-10 | 4.332E-10 | 1.666E-10 | 4.820E-11 | 1.910E-11 | 1.020E-11 | 6.314E-12 |
| SE | 2.559E-08 | 5.242E-09 | 1.368E-09 | 6.146E-10 | 3.477E-10 | 1.337E-10 | 3.868E-11 | 1.533E-11 | 8.187E-12 | 5.067E-12 |
| SSE | 2.283E-08 | 4.676E-09 | 1.221E-09 | 5.482E-10 | 3.101E-10 | 1.193E-10 | 3.450E-11 | 1.367E-11 | 7.303E-12 | 4.520E-12 |
| S | 1.827E-08 | 3.743E-09 | 9.772E-10 | 4.389E-10 | 2.483E-10 | 9.548E-11 | 2.762E-11 | 1.095E-11 | 5.846E-12 | 3.618E-12 |
| SSW | 1.526E-08 | 3.127E-09 | 8.162E-10 | 3.666E-10 | 2.074E-10 | 7.975E-11 | 2.307E-11 | 9.144E-12 | 4.883E-12 | 3.022E-12 |
| SW | 1.797E-08 | 3.680E-09 | 9.608E-10 | 4.315E-10 | 2.441E-10 | 9.387E-11 | 2.716E-11 | 1.076E-11 | 5.748E-12 | 3.558E-12 |
| WSW | 1.646E-08 | 3.372E-09 | 8.803E-10 | 3.954E-10 | 2.237E-10 | 8.601E-11 | 2.488E-11 | 9.862E-12 | 5.266E-12 | 3.260E-12 |
| W | 1.825E-08 | 3.738E-09 | 9.759E-10 | 4.383E-10 | 2.480E-10 | 9.536E-11 | 2.759E-11 | 1.093E-11 | 5.839E-12 | 3.614E-12 |
| WNW | 2.162E-08 | 4.429E-09 | 1.156E-09 | 5.193E-10 | 2.938E-10 | 1.130E-10 | 3.268E-11 | 1.295E-11 | 6.917E-12 | 4.281E-12 |
| NW | 2.060E-08 | 4.220E-09 | 1.102E-09 | 4.947E-10 | 2.799E-10 | 1.076E-10 | 3.114E-11 | 1.234E-11 | 6.590E-12 | 4.079E-12 |
| NNW | 1.837E-08 | 3.762E-09 | 9.821E-10 | 4.411E-10 | 2.495E-10 | 9.596E-11 | 2.776E-11 | 1.100E-11 | 5.875E-12 | 3.637E-12 |

## Table 2.7-100 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

| | Annual Average X/Q (sec/$m^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** |
| N | 1.847E-06 | 6.419E-07 | 3.901E-07 | 2.390E-07 | 1.300E-07 | 8.553E-08 | 6.176E-08 | 4.731E-08 | 3.778E-08 | 3.111E-08 | 2.641E-08 |
| NNE | 3.700E-06 | 1.308E-06 | 7.853E-07 | 4.572E-07 | 2.338E-07 | 1.489E-07 | 1.057E-07 | 8.007E-08 | 6.514E-08 | 5.466E-08 | 4.612E-08 |
| NE | 4.753E-06 | 1.755E-06 | 1.028E-06 | 5.637E-07 | 2.628E-07 | 1.612E-07 | 1.128E-07 | 8.531E-08 | 6.785E-08 | 5.593E-08 | 4.733E-08 |
| ENE | 2.592E-06 | 1.040E-06 | 6.226E-07 | 3.489E-07 | 1.723E-07 | 1.114E-07 | 8.133E-08 | 6.357E-08 | 5.192E-08 | 4.374E-08 | 3.770E-08 |
| E | 1.792E-06 | 7.851E-07 | 4.809E-07 | 2.708E-07 | 1.335E-07 | 8.608E-08 | 6.270E-08 | 4.893E-08 | 3.994E-08 | 3.364E-08 | 2.900E-08 |
| ESE | 1.930E-06 | 8.467E-07 | 5.110E-07 | 2.833E-07 | 1.366E-07 | 8.712E-08 | 6.322E-08 | 4.935E-08 | 4.037E-08 | 3.412E-08 | 2.954E-08 |
| SE | 1.709E-06 | 7.440E-07 | 4.472E-07 | 2.474E-07 | 1.190E-07 | 7.593E-08 | 5.511E-08 | 4.300E-08 | 3.512E-08 | 2.961E-08 | 2.556E-08 |
| SSE | 2.063E-06 | 8.025E-07 | 4.717E-07 | 2.605E-07 | 1.251E-07 | 7.882E-08 | 5.630E-08 | 4.323E-08 | 3.479E-08 | 2.895E-08 | 2.470E-08 |
| S | 2.096E-06 | 7.468E-07 | 4.308E-07 | 2.364E-07 | 1.123E-07 | 6.997E-08 | 4.951E-08 | 3.774E-08 | 3.020E-08 | 2.502E-08 | 2.128E-08 |
| SSW | 1.650E-06 | 6.059E-07 | 3.574E-07 | 2.007E-07 | 9.800E-08 | 6.227E-08 | 4.466E-08 | 3.434E-08 | 2.764E-08 | 2.298E-08 | 1.957E-08 |
| SW | 1.167E-06 | 4.527E-07 | 3.182E-07 | 2.117E-07 | 1.177E-07 | 7.587E-08 | 5.335E-08 | 3.984E-08 | 3.110E-08 | 2.509E-08 | 2.078E-08 |
| WSW | 1.208E-06 | 4.555E-07 | 3.026E-07 | 1.913E-07 | 1.001E-07 | 6.246E-08 | 4.309E-08 | 3.178E-08 | 2.458E-08 | 1.971E-08 | 1.643E-08 |
| W | 1.618E-06 | 5.700E-07 | 3.591E-07 | 2.192E-07 | 1.106E-07 | 6.814E-08 | 4.679E-08 | 3.446E-08 | 2.667E-08 | 2.141E-08 | 1.768E-08 |
| WNW | 1.899E-06 | 6.393E-07 | 3.869E-07 | 2.372E-07 | 1.231E-07 | 7.735E-08 | 5.386E-08 | 4.011E-08 | 3.131E-08 | 2.532E-08 | 2.104E-08 |
| NW | 1.889E-06 | 6.269E-07 | 3.596E-07 | 2.129E-07 | 1.094E-07 | 6.886E-08 | 4.813E-08 | 3.599E-08 | 2.822E-08 | 2.290E-08 | 1.919E-08 |
| NNW | 1.757E-06 | 5.793E-07 | 3.291E-07 | 1.924E-07 | 1.002E-07 | 6.445E-08 | 4.598E-08 | 3.497E-08 | 2.780E-08 | 2.284E-08 | 1.947E-08 |

## Table 2.7-100 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

Annual Average X/Q (sec/$m^3$)

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| N | 2.285E-08 | 1.424E-08 | 1.043E-08 | 7.007E-09 | 5.237E-09 | 4.107E-09 | 3.296E-09 | 2.698E-09 | 2.264E-09 | 1.941E-09 | 1.691E-09 |
| NNE | 3.972E-08 | 2.303E-08 | 1.602E-08 | 1.002E-08 | 7.161E-09 | 5.515E-09 | 4.455E-09 | 3.719E-09 | 3.182E-09 | 2.774E-09 | 2.454E-09 |
| NE | 4.094E-08 | 2.508E-08 | 1.825E-08 | 1.225E-08 | 9.247E-09 | 7.451E-09 | 6.258E-09 | 5.408E-09 | 4.773E-09 | 4.279E-09 | 3.884E-09 |
| ENE | 3.314E-08 | 2.158E-08 | 1.633E-08 | 1.151E-08 | 8.984E-09 | 7.421E-09 | 6.358E-09 | 5.588E-09 | 5.002E-09 | 4.542E-09 | 4.169E-09 |
| E | 2.553E-08 | 1.641E-08 | 1.227E-08 | 8.460E-09 | 6.457E-09 | 5.213E-09 | 4.366E-09 | 3.751E-09 | 3.286E-09 | 2.921E-09 | 2.627E-09 |
| ESE | 2.612E-08 | 1.735E-08 | 1.334E-08 | 9.618E-09 | 7.600E-09 | 6.316E-09 | 5.423E-09 | 4.765E-09 | 4.259E-09 | 3.857E-09 | 3.530E-09 |
| SE | 2.253E-08 | 1.480E-08 | 1.126E-08 | 7.987E-09 | 6.248E-09 | 5.161E-09 | 4.416E-09 | 3.874E-09 | 3.460E-09 | 3.134E-09 | 2.871E-09 |
| SSE | 2.153E-08 | 1.419E-08 | 1.101E-08 | 8.274E-09 | 6.887E-09 | 6.012E-09 | 5.373E-09 | 4.855E-09 | 4.401E-09 | 3.987E-09 | 3.599E-09 |
| S | 1.847E-08 | 1.173E-08 | 8.812E-09 | 6.256E-09 | 4.962E-09 | 4.171E-09 | 3.632E-09 | 3.234E-09 | 2.924E-09 | 2.669E-09 | 2.454E-09 |
| SSW | 1.701E-08 | 1.064E-08 | 7.833E-09 | 5.315E-09 | 4.040E-09 | 3.270E-09 | 2.756E-09 | 2.387E-09 | 2.108E-09 | 1.890E-09 | 1.713E-09 |
| SW | 1.758E-08 | 9.725E-09 | 6.525E-09 | 3.872E-09 | 2.670E-09 | 2.000E-09 | 1.580E-09 | 1.295E-09 | 1.090E-09 | 9.369E-10 | 8.183E-10 |
| WSW | 1.398E-08 | 7.668E-09 | 5.130E-09 | 3.040E-09 | 2.097E-09 | 1.570E-09 | 1.239E-09 | 1.014E-09 | 8.510E-10 | 7.284E-10 | 6.330E-10 |
| W | 1.493E-08 | 8.573E-09 | 5.942E-09 | 3.703E-09 | 2.619E-09 | 1.965E-09 | 1.537E-09 | 1.248E-09 | 1.043E-09 | 8.912E-10 | 7.744E-10 |
| WNW | 1.787E-08 | 1.072E-08 | 7.716E-09 | 5.098E-09 | 3.706E-09 | 2.786E-09 | 2.190E-09 | 1.788E-09 | 1.501E-09 | 1.288E-09 | 1.123E-09 |
| NW | 1.643E-08 | 9.815E-09 | 7.039E-09 | 4.658E-09 | 3.470E-09 | 2.722E-09 | 2.186E-09 | 1.793E-09 | 1.510E-09 | 1.299E-09 | 1.135E-09 |
| NNW | 1.693E-08 | 1.073E-08 | 7.992E-09 | 5.499E-09 | 4.109E-09 | 3.152E-09 | 2.489E-09 | 2.038E-09 | 1.715E-09 | 1.474E-09 | 1.288E-09 |

## Table 2.7-100 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

| | X/Q (sec/m$^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| Sector | 0.5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| N | 3.789E-07 | 1.345E-07 | 6.232E-08 | 3.796E-08 | 2.648E-08 | 1.446E-08 | 6.980E-09 | 4.084E-09 | 2.703E-09 | 1.944E-09 |
| NNE | 7.557E-07 | 2.457E-07 | 1.070E-07 | 6.541E-08 | 4.628E-08 | 2.363E-08 | 1.008E-08 | 5.530E-09 | 3.725E-09 | 2.777E-09 |
| NE | 9.831E-07 | 2.845E-07 | 1.147E-07 | 6.830E-08 | 4.751E-08 | 2.557E-08 | 1.225E-08 | 7.453E-09 | 5.409E-09 | 4.279E-09 |
| ENE | 5.938E-07 | 1.845E-07 | 8.224E-08 | 5.213E-08 | 3.780E-08 | 2.181E-08 | 1.146E-08 | 7.413E-09 | 5.585E-09 | 4.540E-09 |
| E | 4.551E-07 | 1.429E-07 | 6.343E-08 | 4.011E-08 | 2.909E-08 | 1.660E-08 | 8.417E-09 | 5.206E-09 | 3.749E-09 | 2.920E-09 |
| ESE | 4.844E-07 | 1.472E-07 | 6.405E-08 | 4.055E-08 | 2.963E-08 | 1.752E-08 | 9.548E-09 | 6.301E-09 | 4.760E-09 | 3.855E-09 |
| SE | 4.243E-07 | 1.284E-07 | 5.582E-08 | 3.527E-08 | 2.564E-08 | 1.495E-08 | 7.941E-09 | 5.153E-09 | 3.871E-09 | 3.133E-09 |
| SSE | 4.513E-07 | 1.346E-07 | 5.708E-08 | 3.498E-08 | 2.479E-08 | 1.441E-08 | 8.265E-09 | 5.990E-09 | 4.830E-09 | 3.966E-09 |
| S | 4.146E-07 | 1.211E-07 | 5.025E-08 | 3.038E-08 | 2.135E-08 | 1.193E-08 | 6.249E-09 | 4.166E-09 | 3.230E-09 | 2.665E-09 |
| SSW | 3.430E-07 | 1.049E-07 | 4.523E-08 | 2.778E-08 | 1.963E-08 | 1.081E-08 | 5.308E-09 | 3.270E-09 | 2.386E-09 | 1.889E-09 |
| SW | 3.007E-07 | 1.200E-07 | 5.395E-08 | 3.131E-08 | 2.088E-08 | 1.005E-08 | 3.928E-09 | 2.011E-09 | 1.298E-09 | 9.384E-10 |
| WSW | 2.871E-07 | 1.036E-07 | 4.373E-08 | 2.478E-08 | 1.649E-08 | 7.943E-09 | 3.085E-09 | 1.578E-09 | 1.016E-09 | 7.294E-10 |
| W | 3.438E-07 | 1.159E-07 | 4.755E-08 | 2.690E-08 | 1.777E-08 | 8.816E-09 | 3.719E-09 | 1.968E-09 | 1.253E-09 | 8.930E-10 |
| WNW | 3.764E-07 | 1.281E-07 | 5.462E-08 | 3.154E-08 | 2.113E-08 | 1.097E-08 | 5.061E-09 | 2.793E-09 | 1.793E-09 | 1.290E-09 |
| NW | 3.538E-07 | 1.144E-07 | 4.880E-08 | 2.841E-08 | 1.927E-08 | 1.005E-08 | 4.659E-09 | 2.707E-09 | 1.798E-09 | 1.301E-09 |
| NNW | 3.240E-07 | 1.048E-07 | 4.650E-08 | 2.796E-08 | 1.952E-08 | 1.089E-08 | 5.435E-09 | 3.142E-09 | 2.044E-09 | 1.476E-09 |

## Table 2.7-101 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

| | Annual Average X/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** |
| N | 1.846E-06 | 6.414E-07 | 3.896E-07 | 2.386E-07 | 1.297E-07 | 8.525E-08 | 6.150E-08 | 4.707E-08 | 3.755E-08 | 3.089E-08 | 2.620E-08 |
| NNE | 3.699E-06 | 1.307E-06 | 7.844E-07 | 4.565E-07 | 2.333E-07 | 1.485E-07 | 1.053E-07 | 7.970E-08 | 6.479E-08 | 5.431E-08 | 4.579E-08 |
| NE | 4.751E-06 | 1.753E-06 | 1.026E-06 | 5.628E-07 | 2.622E-07 | 1.607E-07 | 1.124E-07 | 8.494E-08 | 6.750E-08 | 5.559E-08 | 4.701E-08 |
| ENE | 2.591E-06 | 1.039E-06 | 6.218E-07 | 3.483E-07 | 1.718E-07 | 1.110E-07 | 8.097E-08 | 6.323E-08 | 5.160E-08 | 4.342E-08 | 3.739E-08 |
| E | 1.791E-06 | 7.844E-07 | 4.803E-07 | 2.703E-07 | 1.331E-07 | 8.576E-08 | 6.240E-08 | 4.866E-08 | 3.967E-08 | 3.337E-08 | 2.874E-08 |
| ESE | 1.929E-06 | 8.459E-07 | 5.103E-07 | 2.828E-07 | 1.362E-07 | 8.680E-08 | 6.293E-08 | 4.907E-08 | 4.010E-08 | 3.385E-08 | 2.928E-08 |
| SE | 1.709E-06 | 7.432E-07 | 4.465E-07 | 2.470E-07 | 1.187E-07 | 7.565E-08 | 5.486E-08 | 4.276E-08 | 3.489E-08 | 2.939E-08 | 2.534E-08 |
| SSE | 2.062E-06 | 8.018E-07 | 4.710E-07 | 2.600E-07 | 1.248E-07 | 7.855E-08 | 5.606E-08 | 4.300E-08 | 3.458E-08 | 2.875E-08 | 2.451E-08 |
| S | 2.095E-06 | 7.461E-07 | 4.302E-07 | 2.360E-07 | 1.120E-07 | 6.973E-08 | 4.930E-08 | 3.754E-08 | 3.002E-08 | 2.485E-08 | 2.111E-08 |
| SSW | 1.650E-06 | 6.053E-07 | 3.569E-07 | 2.003E-07 | 9.776E-08 | 6.206E-08 | 4.447E-08 | 3.417E-08 | 2.748E-08 | 2.282E-08 | 1.942E-08 |
| SW | 1.166E-06 | 4.523E-07 | 3.178E-07 | 2.113E-07 | 1.175E-07 | 7.564E-08 | 5.315E-08 | 3.966E-08 | 3.093E-08 | 2.493E-08 | 2.063E-08 |
| WSW | 1.208E-06 | 4.552E-07 | 3.023E-07 | 1.910E-07 | 9.987E-08 | 6.229E-08 | 4.294E-08 | 3.165E-08 | 2.446E-08 | 1.960E-08 | 1.632E-08 |
| W | 1.617E-06 | 5.696E-07 | 3.588E-07 | 2.189E-07 | 1.104E-07 | 6.796E-08 | 4.663E-08 | 3.432E-08 | 2.655E-08 | 2.129E-08 | 1.757E-08 |
| WNW | 1.898E-06 | 6.387E-07 | 3.864E-07 | 2.369E-07 | 1.229E-07 | 7.712E-08 | 5.366E-08 | 3.993E-08 | 3.115E-08 | 2.517E-08 | 2.089E-08 |
| NW | 1.888E-06 | 6.263E-07 | 3.591E-07 | 2.126E-07 | 1.092E-07 | 6.864E-08 | 4.795E-08 | 3.583E-08 | 2.806E-08 | 2.276E-08 | 1.905E-08 |
| NNW | 1.757E-06 | 5.788E-07 | 3.286E-07 | 1.921E-07 | 9.994E-08 | 6.424E-08 | 4.579E-08 | 3.480E-08 | 2.764E-08 | 2.268E-08 | 1.932E-08 |

## Table 2.7-101 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

**Annual Average X/Q (sec/m³)**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 2.264E-08 | 1.404E-08 | 1.023E-08 | 6.797E-09 | 5.021E-09 | 3.891E-09 | 3.086E-09 | 2.497E-09 | 2.073E-09 | 1.758E-09 | 1.516E-09 |
| NNE | 3.940E-08 | 2.274E-08 | 1.575E-08 | 9.752E-09 | 6.906E-09 | 5.268E-09 | 4.214E-09 | 3.485E-09 | 2.953E-09 | 2.550E-09 | 2.234E-09 |
| NE | 4.063E-08 | 2.478E-08 | 1.796E-08 | 1.193E-08 | 8.924E-09 | 7.118E-09 | 5.916E-09 | 5.058E-09 | 4.416E-09 | 3.916E-09 | 3.516E-09 |
| ENE | 3.283E-08 | 2.127E-08 | 1.600E-08 | 1.115E-08 | 8.598E-09 | 7.015E-09 | 5.935E-09 | 5.149E-09 | 4.550E-09 | 4.078E-09 | 3.694E-09 |
| E | 2.527E-08 | 1.615E-08 | 1.200E-08 | 8.171E-09 | 6.156E-09 | 4.905E-09 | 4.054E-09 | 3.437E-09 | 2.971E-09 | 2.606E-09 | 2.313E-09 |
| ESE | 2.586E-08 | 1.707E-08 | 1.305E-08 | 9.285E-09 | 7.241E-09 | 5.937E-09 | 5.029E-09 | 4.359E-09 | 3.843E-09 | 3.433E-09 | 3.099E-09 |
| SE | 2.232E-08 | 1.458E-08 | 1.103E-08 | 7.731E-09 | 5.975E-09 | 4.874E-09 | 4.118E-09 | 3.566E-09 | 3.145E-09 | 2.812E-09 | 2.542E-09 |
| SSE | 2.134E-08 | 1.400E-08 | 1.080E-08 | 8.031E-09 | 6.607E-09 | 5.697E-09 | 5.028E-09 | 4.485E-09 | 4.014E-09 | 3.589E-09 | 3.198E-09 |
| S | 1.832E-08 | 1.157E-08 | 8.655E-09 | 6.084E-09 | 4.777E-09 | 3.975E-09 | 3.424E-09 | 3.017E-09 | 2.698E-09 | 2.437E-09 | 2.215E-09 |
| SSW | 1.686E-08 | 1.051E-08 | 7.696E-09 | 5.171E-09 | 3.891E-09 | 3.117E-09 | 2.599E-09 | 2.227E-09 | 1.946E-09 | 1.725E-09 | 1.546E-09 |
| SW | 1.744E-08 | 9.604E-09 | 6.415E-09 | 3.771E-09 | 2.576E-09 | 1.911E-09 | 1.495E-09 | 1.213E-09 | 1.011E-09 | 8.604E-10 | 7.440E-10 |
| WSW | 1.388E-08 | 7.584E-09 | 5.053E-09 | 2.971E-09 | 2.033E-09 | 1.511E-09 | 1.183E-09 | 9.598E-10 | 7.993E-10 | 6.788E-10 | 5.852E-10 |
| W | 1.483E-08 | 8.480E-09 | 5.854E-09 | 3.620E-09 | 2.541E-09 | 1.892E-09 | 1.468E-09 | 1.183E-09 | 9.817E-10 | 8.323E-10 | 7.178E-10 |
| WNW | 1.773E-08 | 1.059E-08 | 7.592E-09 | 4.973E-09 | 3.583E-09 | 2.669E-09 | 2.080E-09 | 1.685E-09 | 1.403E-09 | 1.193E-09 | 1.032E-09 |
| NW | 1.630E-08 | 9.699E-09 | 6.929E-09 | 4.549E-09 | 3.363E-09 | 2.617E-09 | 2.086E-09 | 1.698E-09 | 1.419E-09 | 1.211E-09 | 1.050E-09 |
| NNW | 1.678E-08 | 1.058E-08 | 7.847E-09 | 5.345E-09 | 3.954E-09 | 3.002E-09 | 2.348E-09 | 1.904E-09 | 1.588E-09 | 1.352E-09 | 1.170E-09 |

## Table 2.7-101 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

| | X/Q ($sec/m^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 3.784E-07 | 1.341E-07 | 6.206E-08 | 3.773E-08 | 2.627E-08 | 1.426E-08 | 6.770E-09 | 3.870E-09 | 2.504E-09 | 1.762E-09 |
| NNE | 7.549E-07 | 2.452E-07 | 1.066E-07 | 6.506E-08 | 4.595E-08 | 2.334E-08 | 9.820E-09 | 5.283E-09 | 3.491E-09 | 2.552E-09 |
| NE | 9.820E-07 | 2.839E-07 | 1.143E-07 | 6.795E-08 | 4.719E-08 | 2.527E-08 | 1.194E-08 | 7.118E-09 | 5.059E-09 | 3.916E-09 |
| ENE | 5.930E-07 | 1.840E-07 | 8.188E-08 | 5.181E-08 | 3.749E-08 | 2.150E-08 | 1.109E-08 | 7.005E-09 | 5.145E-09 | 4.075E-09 |
| E | 4.545E-07 | 1.426E-07 | 6.313E-08 | 3.984E-08 | 2.883E-08 | 1.634E-08 | 8.127E-09 | 4.898E-09 | 3.436E-09 | 2.606E-09 |
| ESE | 4.838E-07 | 1.468E-07 | 6.375E-08 | 4.028E-08 | 2.937E-08 | 1.724E-08 | 9.213E-09 | 5.921E-09 | 4.354E-09 | 3.431E-09 |
| SE | 4.238E-07 | 1.281E-07 | 5.556E-08 | 3.504E-08 | 2.542E-08 | 1.472E-08 | 7.683E-09 | 4.866E-09 | 3.564E-09 | 2.811E-09 |
| SSE | 4.507E-07 | 1.343E-07 | 5.683E-08 | 3.476E-08 | 2.459E-08 | 1.421E-08 | 8.014E-09 | 5.672E-09 | 4.461E-09 | 3.570E-09 |
| S | 4.141E-07 | 1.208E-07 | 5.004E-08 | 3.020E-08 | 2.118E-08 | 1.177E-08 | 6.075E-09 | 3.969E-09 | 3.012E-09 | 2.432E-09 |
| SSW | 3.425E-07 | 1.047E-07 | 4.504E-08 | 2.762E-08 | 1.948E-08 | 1.067E-08 | 5.163E-09 | 3.116E-09 | 2.226E-09 | 1.724E-09 |
| SW | 3.004E-07 | 1.197E-07 | 5.375E-08 | 3.114E-08 | 2.073E-08 | 9.929E-09 | 3.828E-09 | 1.922E-09 | 1.217E-09 | 8.620E-10 |
| WSW | 2.868E-07 | 1.034E-07 | 4.358E-08 | 2.466E-08 | 1.639E-08 | 7.859E-09 | 3.017E-09 | 1.519E-09 | 9.624E-10 | 6.798E-10 |
| W | 3.434E-07 | 1.156E-07 | 4.740E-08 | 2.677E-08 | 1.766E-08 | 8.723E-09 | 3.637E-09 | 1.895E-09 | 1.188E-09 | 8.341E-10 |
| WNW | 3.760E-07 | 1.279E-07 | 5.442E-08 | 3.138E-08 | 2.099E-08 | 1.085E-08 | 4.937E-09 | 2.677E-09 | 1.690E-09 | 1.196E-09 |
| NW | 3.534E-07 | 1.141E-07 | 4.862E-08 | 2.826E-08 | 1.913E-08 | 9.936E-09 | 4.551E-09 | 2.604E-09 | 1.702E-09 | 1.213E-09 |
| NNW | 3.236E-07 | 1.046E-07 | 4.631E-08 | 2.780E-08 | 1.937E-08 | 1.074E-08 | 5.283E-09 | 2.994E-09 | 1.910E-09 | 1.354E-09 |

## Table 2.7-102 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

| | Annual Average X/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** |
| N | 1.768E-06 | 5.978E-07 | 3.589E-07 | 2.202E-07 | 1.203E-07 | 7.917E-08 | 5.711E-08 | 4.367E-08 | 3.479E-08 | 2.859E-08 | 2.423E-08 |
| NNE | 3.529E-06 | 1.213E-06 | 7.185E-07 | 4.174E-07 | 2.134E-07 | 1.358E-07 | 9.611E-08 | 7.266E-08 | 5.909E-08 | 4.957E-08 | 4.174E-08 |
| NE | 4.506E-06 | 1.619E-06 | 9.319E-07 | 5.069E-07 | 2.347E-07 | 1.436E-07 | 1.004E-07 | 7.588E-08 | 6.031E-08 | 4.968E-08 | 4.202E-08 |
| ENE | 2.461E-06 | 9.670E-07 | 5.702E-07 | 3.176E-07 | 1.567E-07 | 1.016E-07 | 7.441E-08 | 5.830E-08 | 4.770E-08 | 4.023E-08 | 3.471E-08 |
| E | 1.704E-06 | 7.351E-07 | 4.442E-07 | 2.486E-07 | 1.224E-07 | 7.906E-08 | 5.772E-08 | 4.514E-08 | 3.690E-08 | 3.111E-08 | 2.685E-08 |
| ESE | 1.836E-06 | 7.937E-07 | 4.724E-07 | 2.600E-07 | 1.249E-07 | 7.974E-08 | 5.799E-08 | 4.536E-08 | 3.717E-08 | 3.146E-08 | 2.727E-08 |
| SE | 1.626E-06 | 6.973E-07 | 4.132E-07 | 2.269E-07 | 1.087E-07 | 6.945E-08 | 5.053E-08 | 3.950E-08 | 3.232E-08 | 2.729E-08 | 2.358E-08 |
| SSE | 1.958E-06 | 7.457E-07 | 4.316E-07 | 2.366E-07 | 1.131E-07 | 7.130E-08 | 5.096E-08 | 3.915E-08 | 3.152E-08 | 2.623E-08 | 2.238E-08 |
| S | 1.987E-06 | 6.891E-07 | 3.910E-07 | 2.129E-07 | 1.005E-07 | 6.247E-08 | 4.416E-08 | 3.364E-08 | 2.690E-08 | 2.227E-08 | 1.892E-08 |
| SSW | 1.565E-06 | 5.595E-07 | 3.247E-07 | 1.812E-07 | 8.830E-08 | 5.616E-08 | 4.032E-08 | 3.103E-08 | 2.498E-08 | 2.077E-08 | 1.768E-08 |
| SW | 1.117E-06 | 4.232E-07 | 2.971E-07 | 1.987E-07 | 1.105E-07 | 7.085E-08 | 4.952E-08 | 3.676E-08 | 2.852E-08 | 2.288E-08 | 1.885E-08 |
| WSW | 1.158E-06 | 4.260E-07 | 2.818E-07 | 1.785E-07 | 9.316E-08 | 5.780E-08 | 3.962E-08 | 2.903E-08 | 2.231E-08 | 1.778E-08 | 1.475E-08 |
| W | 1.548E-06 | 5.309E-07 | 3.320E-07 | 2.026E-07 | 1.018E-07 | 6.229E-08 | 4.248E-08 | 3.109E-08 | 2.392E-08 | 1.909E-08 | 1.567E-08 |
| WNW | 1.826E-06 | 5.991E-07 | 3.590E-07 | 2.200E-07 | 1.139E-07 | 7.116E-08 | 4.928E-08 | 3.649E-08 | 2.834E-08 | 2.281E-08 | 1.886E-08 |
| NW | 1.821E-06 | 5.900E-07 | 3.340E-07 | 1.971E-07 | 1.009E-07 | 6.319E-08 | 4.393E-08 | 3.268E-08 | 2.549E-08 | 2.059E-08 | 1.719E-08 |
| NNW | 1.687E-06 | 5.420E-07 | 3.033E-07 | 1.771E-07 | 9.217E-08 | 5.921E-08 | 4.214E-08 | 3.196E-08 | 2.534E-08 | 2.075E-08 | 1.766E-08 |

## Table 2.7-102 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

| | Annual Average X/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 2.092E-08 | 1.299E-08 | 9.471E-09 | 6.236E-09 | 4.388E-09 | 3.255E-09 | 2.514E-09 | 1.991E-09 | 1.621E-09 | 1.351E-09 | 1.147E-09 |
| NNE | 3.587E-08 | 2.060E-08 | 1.420E-08 | 8.752E-09 | 6.184E-09 | 4.715E-09 | 3.775E-09 | 3.124E-09 | 2.640E-09 | 2.275E-09 | 1.986E-09 |
| NE | 3.632E-08 | 2.223E-08 | 1.615E-08 | 1.080E-08 | 8.127E-09 | 6.530E-09 | 5.470E-09 | 4.713E-09 | 4.126E-09 | 3.672E-09 | 3.303E-09 |
| ENE | 3.053E-08 | 1.994E-08 | 1.509E-08 | 1.063E-08 | 8.276E-09 | 6.820E-09 | 5.829E-09 | 5.106E-09 | 4.533E-09 | 4.084E-09 | 3.714E-09 |
| E | 2.364E-08 | 1.521E-08 | 1.136E-08 | 7.803E-09 | 5.926E-09 | 4.761E-09 | 3.967E-09 | 3.391E-09 | 2.942E-09 | 2.593E-09 | 2.310E-09 |
| ESE | 2.414E-08 | 1.607E-08 | 1.237E-08 | 8.905E-09 | 7.018E-09 | 5.814E-09 | 4.975E-09 | 4.355E-09 | 3.857E-09 | 3.465E-09 | 3.141E-09 |
| SE | 2.080E-08 | 1.370E-08 | 1.042E-08 | 7.378E-09 | 5.755E-09 | 4.739E-09 | 4.042E-09 | 3.532E-09 | 3.127E-09 | 2.810E-09 | 2.550E-09 |
| SSE | 1.950E-08 | 1.291E-08 | 1.004E-08 | 7.581E-09 | 6.324E-09 | 5.474E-09 | 4.729E-09 | 4.112E-09 | 3.595E-09 | 3.151E-09 | 2.775E-09 |
| S | 1.642E-08 | 1.044E-08 | 7.850E-09 | 5.579E-09 | 4.429E-09 | 3.725E-09 | 3.235E-09 | 2.845E-09 | 2.506E-09 | 2.225E-09 | 1.989E-09 |
| SSW | 1.536E-08 | 9.620E-09 | 7.069E-09 | 4.782E-09 | 3.623E-09 | 2.924E-09 | 2.455E-09 | 2.115E-09 | 1.840E-09 | 1.613E-09 | 1.426E-09 |
| SW | 1.587E-08 | 8.593E-09 | 5.667E-09 | 3.273E-09 | 2.209E-09 | 1.625E-09 | 1.264E-09 | 1.018E-09 | 8.400E-10 | 7.055E-10 | 6.010E-10 |
| WSW | 1.250E-08 | 6.708E-09 | 4.408E-09 | 2.540E-09 | 1.702E-09 | 1.228E-09 | 9.312E-10 | 7.328E-10 | 5.934E-10 | 4.920E-10 | 4.158E-10 |
| W | 1.317E-08 | 7.447E-09 | 5.094E-09 | 3.042E-09 | 2.026E-09 | 1.454E-09 | 1.095E-09 | 8.596E-10 | 6.962E-10 | 5.776E-10 | 4.883E-10 |
| WNW | 1.595E-08 | 9.470E-09 | 6.750E-09 | 4.259E-09 | 2.918E-09 | 2.104E-09 | 1.593E-09 | 1.258E-09 | 1.024E-09 | 8.530E-10 | 7.240E-10 |
| NW | 1.466E-08 | 8.657E-09 | 6.151E-09 | 3.941E-09 | 2.763E-09 | 2.054E-09 | 1.588E-09 | 1.259E-09 | 1.028E-09 | 8.582E-10 | 7.300E-10 |
| NNW | 1.532E-08 | 9.679E-09 | 7.182E-09 | 4.747E-09 | 3.318E-09 | 2.434E-09 | 1.853E-09 | 1.467E-09 | 1.197E-09 | 9.993E-10 | 8.497E-10 |

## Table 2.7-102 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

| | X/Q ($sec/m^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 3.504E-07 | 1.242E-07 | 5.761E-08 | 3.497E-08 | 2.430E-08 | 1.319E-08 | 6.134E-09 | 3.261E-09 | 2.000E-09 | 1.355E-09 |
| NNE | 6.946E-07 | 2.242E-07 | 9.731E-08 | 5.934E-08 | 4.189E-08 | 2.115E-08 | 8.822E-09 | 4.731E-09 | 3.126E-09 | 2.276E-09 |
| NE | 8.957E-07 | 2.547E-07 | 1.021E-07 | 6.071E-08 | 4.218E-08 | 2.266E-08 | 1.080E-08 | 6.532E-09 | 4.706E-09 | 3.670E-09 |
| ENE | 5.461E-07 | 1.680E-07 | 7.522E-08 | 4.788E-08 | 3.480E-08 | 2.014E-08 | 1.057E-08 | 6.812E-09 | 5.094E-09 | 4.080E-09 |
| E | 4.219E-07 | 1.312E-07 | 5.838E-08 | 3.705E-08 | 2.692E-08 | 1.538E-08 | 7.760E-09 | 4.754E-09 | 3.384E-09 | 2.592E-09 |
| ESE | 4.494E-07 | 1.348E-07 | 5.874E-08 | 3.733E-08 | 2.735E-08 | 1.622E-08 | 8.836E-09 | 5.800E-09 | 4.342E-09 | 3.461E-09 |
| SE | 3.935E-07 | 1.175E-07 | 5.117E-08 | 3.246E-08 | 2.365E-08 | 1.382E-08 | 7.333E-09 | 4.731E-09 | 3.523E-09 | 2.808E-09 |
| SSE | 4.147E-07 | 1.220E-07 | 5.166E-08 | 3.168E-08 | 2.246E-08 | 1.310E-08 | 7.569E-09 | 5.403E-09 | 4.091E-09 | 3.143E-09 |
| S | 3.781E-07 | 1.086E-07 | 4.483E-08 | 2.706E-08 | 1.899E-08 | 1.062E-08 | 5.573E-09 | 3.717E-09 | 2.828E-09 | 2.221E-09 |
| SSW | 3.131E-07 | 9.467E-08 | 4.083E-08 | 2.510E-08 | 1.774E-08 | 9.762E-09 | 4.775E-09 | 2.923E-09 | 2.107E-09 | 1.611E-09 |
| SW | 2.814E-07 | 1.125E-07 | 5.011E-08 | 2.873E-08 | 1.894E-08 | 8.909E-09 | 3.332E-09 | 1.636E-09 | 1.020E-09 | 7.066E-10 |
| WSW | 2.680E-07 | 9.642E-08 | 4.023E-08 | 2.250E-08 | 1.481E-08 | 6.973E-09 | 2.583E-09 | 1.236E-09 | 7.364E-10 | 4.939E-10 |
| W | 3.186E-07 | 1.066E-07 | 4.321E-08 | 2.413E-08 | 1.576E-08 | 7.673E-09 | 3.047E-09 | 1.463E-09 | 8.646E-10 | 5.796E-10 |
| WNW | 3.506E-07 | 1.185E-07 | 5.000E-08 | 2.856E-08 | 1.895E-08 | 9.701E-09 | 4.217E-09 | 2.117E-09 | 1.264E-09 | 8.558E-10 |
| NW | 3.301E-07 | 1.055E-07 | 4.457E-08 | 2.568E-08 | 1.726E-08 | 8.878E-09 | 3.909E-09 | 2.057E-09 | 1.265E-09 | 8.609E-10 |
| NNW | 3.003E-07 | 9.639E-08 | 4.262E-08 | 2.548E-08 | 1.771E-08 | 9.824E-09 | 4.653E-09 | 2.437E-09 | 1.474E-09 | 1.002E-09 |

## Table 2.7-103 Annual Average D/Q Values for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors

| | Distances in Miles | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 0.25 | 0.50 | 0.75 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 |
| N | 2.364E-08 | 1.178E-08 | 7.038E-09 | 3.670E-09 | 1.420E-09 | 7.470E-10 | 4.586E-10 | 3.104E-10 | 2.242E-10 | 1.697E-10 | 1.331E-10 |
| NNE | 5.332E-08 | 2.515E-08 | 1.463E-08 | 7.556E-09 | 2.945E-09 | 1.539E-09 | 9.392E-10 | 6.324E-10 | 4.550E-10 | 3.433E-10 | 2.685E-10 |
| NE | 5.519E-08 | 2.258E-08 | 1.225E-08 | 6.026E-09 | 2.233E-09 | 1.138E-09 | 6.832E-10 | 4.548E-10 | 3.246E-10 | 2.434E-10 | 1.896E-10 |
| ENE | 2.995E-08 | 1.358E-08 | 7.554E-09 | 3.752E-09 | 1.387E-09 | 7.122E-10 | 4.308E-10 | 2.887E-10 | 2.072E-10 | 1.562E-10 | 1.222E-10 |
| E | 2.453E-08 | 1.184E-08 | 6.741E-09 | 3.378E-09 | 1.245E-09 | 6.416E-10 | 3.893E-10 | 2.615E-10 | 1.882E-10 | 1.422E-10 | 1.115E-10 |
| ESE | 2.692E-08 | 1.302E-08 | 7.401E-09 | 3.704E-09 | 1.363E-09 | 7.023E-10 | 4.260E-10 | 2.862E-10 | 2.059E-10 | 1.556E-10 | 1.220E-10 |
| SE | 2.234E-08 | 1.093E-08 | 6.220E-09 | 3.107E-09 | 1.139E-09 | 5.857E-10 | 3.549E-10 | 2.383E-10 | 1.714E-10 | 1.295E-10 | 1.016E-10 |
| SSE | 2.249E-08 | 1.025E-08 | 5.700E-09 | 2.830E-09 | 1.044E-09 | 5.368E-10 | 3.250E-10 | 2.179E-10 | 1.565E-10 | 1.180E-10 | 9.236E-11 |
| S | 1.938E-08 | 8.156E-09 | 4.484E-09 | 2.222E-09 | 8.237E-10 | 4.219E-10 | 2.546E-10 | 1.701E-10 | 1.217E-10 | 9.153E-11 | 7.141E-11 |
| SSW | 1.621E-08 | 6.780E-09 | 3.746E-09 | 1.860E-09 | 6.893E-10 | 3.530E-10 | 2.129E-10 | 1.423E-10 | 1.018E-10 | 7.653E-11 | 5.970E-11 |
| SW | 1.930E-08 | 1.057E-08 | 6.902E-09 | 3.844E-09 | 1.607E-09 | 8.673E-10 | 5.395E-10 | 3.679E-10 | 2.668E-10 | 2.023E-10 | 1.586E-10 |
| WSW | 2.338E-08 | 1.207E-08 | 7.420E-09 | 3.971E-09 | 1.605E-09 | 8.498E-10 | 5.221E-10 | 3.531E-10 | 2.547E-10 | 1.925E-10 | 1.507E-10 |
| W | 3.030E-08 | 1.463E-08 | 8.627E-09 | 4.628E-09 | 1.832E-09 | 9.540E-10 | 5.795E-10 | 3.888E-10 | 2.789E-10 | 2.100E-10 | 1.640E-10 |
| WNW | 3.191E-08 | 1.623E-08 | 9.548E-09 | 5.154E-09 | 2.009E-09 | 1.044E-09 | 6.345E-10 | 4.261E-10 | 3.061E-10 | 2.308E-10 | 1.805E-10 |
| NW | 2.936E-08 | 1.541E-08 | 9.074E-09 | 4.877E-09 | 1.875E-09 | 9.712E-10 | 5.896E-10 | 3.959E-10 | 2.844E-10 | 2.146E-10 | 1.680E-10 |
| NNW | 2.469E-08 | 1.246E-08 | 7.217E-09 | 3.674E-09 | 1.387E-09 | 7.224E-10 | 4.410E-10 | 2.975E-10 | 2.146E-10 | 1.624E-10 | 1.274E-10 |

## Table 2.7-103 Annual Average D/Q Values for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors

| | Distances in Miles | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| N | 1.073E-10 | 5.070E-11 | 3.196E-11 | 3.925E-11 | 2.843E-11 | 1.732E-11 | 1.203E-11 | 9.077E-12 | 7.072E-12 | 5.648E-12 | 4.611E-12 |
| NNE | 2.160E-10 | 9.930E-11 | 6.062E-11 | 3.165E-11 | 2.024E-11 | 1.455E-11 | 1.137E-11 | 9.229E-12 | 8.176E-12 | 6.981E-12 | 6.995E-12 |
| NE | 1.520E-10 | 6.948E-11 | 4.242E-11 | 2.232E-11 | 1.432E-11 | 1.039E-11 | 8.218E-12 | 7.131E-12 | 6.185E-12 | 6.383E-12 | 6.951E-12 |
| ENE | 9.834E-11 | 4.567E-11 | 2.812E-11 | 1.510E-11 | 9.901E-12 | 7.379E-12 | 6.003E-12 | 5.204E-12 | 4.635E-12 | 4.323E-12 | 4.469E-12 |
| E | 8.991E-11 | 4.210E-11 | 2.601E-11 | 1.406E-11 | 9.159E-12 | 6.919E-12 | 5.595E-12 | 4.733E-12 | 4.136E-12 | 3.664E-12 | 3.325E-12 |
| ESE | 9.842E-11 | 4.611E-11 | 2.850E-11 | 1.542E-11 | 1.007E-11 | 7.645E-12 | 6.232E-12 | 5.323E-12 | 4.699E-12 | 4.206E-12 | 3.833E-12 |
| SE | 8.197E-11 | 3.845E-11 | 2.380E-11 | 1.291E-11 | 8.444E-12 | 6.421E-12 | 5.171E-12 | 4.403E-12 | 3.887E-12 | 3.475E-12 | 3.183E-12 |
| SSE | 7.438E-11 | 3.460E-11 | 2.147E-11 | 1.163E-11 | 9.941E-12 | 2.015E-11 | 1.913E-11 | 1.418E-11 | 1.073E-11 | 7.424E-12 | 5.631E-12 |
| S | 5.735E-11 | 2.640E-11 | 1.617E-11 | 8.597E-12 | 5.701E-12 | 5.069E-12 | 7.181E-12 | 9.852E-12 | 9.158E-12 | 7.359E-12 | 5.944E-12 |
| SSW | 4.793E-11 | 2.206E-11 | 1.351E-11 | 7.166E-12 | 4.757E-12 | 4.190E-12 | 4.211E-12 | 4.727E-12 | 6.495E-12 | 5.983E-12 | 5.108E-12 |
| SW | 1.277E-10 | 5.875E-11 | 3.573E-11 | 1.821E-11 | 1.147E-11 | 8.171E-12 | 6.310E-12 | 5.609E-12 | 5.635E-12 | 4.878E-12 | 4.113E-12 |
| WSW | 1.239E-10 | 5.634E-11 | 3.370E-11 | 1.868E-11 | 1.395E-11 | 1.193E-11 | 8.926E-12 | 6.830E-12 | 5.323E-12 | 4.255E-12 | 3.504E-12 |
| W | 1.318E-10 | 6.028E-11 | 3.950E-11 | 3.013E-11 | 1.939E-11 | 1.321E-11 | 9.685E-12 | 7.286E-12 | 5.670E-12 | 4.530E-12 | 3.698E-12 |
| WNW | 1.453E-10 | 6.670E-11 | 5.189E-11 | 3.731E-11 | 2.311E-11 | 1.601E-11 | 1.157E-11 | 8.703E-12 | 6.771E-12 | 5.409E-12 | 4.416E-12 |
| NW | 1.353E-10 | 6.230E-11 | 4.100E-11 | 3.548E-11 | 2.398E-11 | 1.572E-11 | 1.102E-11 | 8.303E-12 | 6.449E-12 | 5.155E-12 | 4.211E-12 |
| NNW | 1.056E-10 | 4.865E-11 | 3.939E-11 | 3.506E-11 | 2.147E-11 | 1.393E-11 | 1.005E-11 | 7.564E-12 | 5.886E-12 | 4.701E-12 | 3.837E-12 |

## Table 2.7-103 Annual Average D/Q Values for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors

| | Segment Boundaries in Miles | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 0.5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| N | 6.596E-09 | 1.621E-09 | 4.762E-10 | 2.281E-10 | 1.344E-10 | 5.494E-11 | 3.282E-11 | 1.817E-11 | 9.158E-12 | 5.686E-12 |
| NNE | 1.382E-08 | 3.345E-09 | 9.764E-10 | 4.631E-10 | 2.712E-10 | 1.080E-10 | 3.302E-11 | 1.479E-11 | 9.440E-12 | 7.340E-12 |
| NE | 1.178E-08 | 2.589E-09 | 7.130E-10 | 3.309E-10 | 1.916E-10 | 7.580E-11 | 2.323E-11 | 1.057E-11 | 7.081E-12 | 6.535E-12 |
| ENE | 7.203E-09 | 1.613E-09 | 4.490E-10 | 2.110E-10 | 1.234E-10 | 4.958E-11 | 1.568E-11 | 7.501E-12 | 5.215E-12 | 4.469E-12 |
| E | 6.379E-09 | 1.451E-09 | 4.055E-10 | 1.916E-10 | 1.126E-10 | 4.557E-11 | 1.454E-11 | 6.986E-12 | 4.752E-12 | 3.678E-12 |
| ESE | 7.006E-09 | 1.590E-09 | 4.438E-10 | 2.097E-10 | 1.232E-10 | 4.991E-11 | 1.595E-11 | 7.728E-12 | 5.345E-12 | 4.214E-12 |
| SE | 5.884E-09 | 1.330E-09 | 3.698E-10 | 1.745E-10 | 1.026E-10 | 4.161E-11 | 1.334E-11 | 6.461E-12 | 4.426E-12 | 3.489E-12 |
| SSE | 5.435E-09 | 1.216E-09 | 3.387E-10 | 1.594E-10 | 9.330E-11 | 3.760E-11 | 1.307E-11 | 1.702E-11 | 1.428E-11 | 7.740E-12 |
| S | 4.295E-09 | 9.558E-10 | 2.654E-10 | 1.241E-10 | 7.216E-11 | 2.873E-11 | 8.994E-12 | 6.082E-12 | 8.824E-12 | 7.368E-12 |
| SSW | 3.582E-09 | 8.000E-10 | 2.220E-10 | 1.037E-10 | 6.033E-11 | 2.401E-11 | 7.506E-12 | 4.350E-12 | 5.253E-12 | 5.811E-12 |
| SW | 6.359E-09 | 1.775E-09 | 5.583E-10 | 2.711E-10 | 1.601E-10 | 6.383E-11 | 1.911E-11 | 8.305E-12 | 5.819E-12 | 4.819E-12 |
| WSW | 6.920E-09 | 1.795E-09 | 5.419E-10 | 2.591E-10 | 1.532E-10 | 6.128E-11 | 1.991E-11 | 1.127E-11 | 6.855E-12 | 4.294E-12 |
| W | 8.185E-09 | 2.063E-09 | 6.031E-10 | 2.841E-10 | 1.657E-10 | 6.694E-11 | 2.744E-11 | 1.345E-11 | 7.356E-12 | 4.560E-12 |
| WNW | 9.080E-09 | 2.279E-09 | 6.603E-10 | 3.117E-10 | 1.824E-10 | 7.758E-11 | 3.424E-11 | 1.613E-11 | 8.787E-12 | 5.445E-12 |
| NW | 8.617E-09 | 2.140E-09 | 6.139E-10 | 2.897E-10 | 1.697E-10 | 6.905E-11 | 3.159E-11 | 1.604E-11 | 8.373E-12 | 5.189E-12 |
| NNW | 6.809E-09 | 1.600E-09 | 4.587E-10 | 2.184E-10 | 1.297E-10 | 5.719E-11 | 2.998E-11 | 1.438E-11 | 7.634E-12 | 4.732E-12 |

## Table 2.7-104 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** |
| N | 2.201E-06 | 7.406E-07 | 4.177E-07 | 2.335E-07 | 1.153E-07 | 7.323E-08 | 5.214E-08 | 3.971E-08 | 3.164E-08 | 2.604E-08 | 2.209E-08 |
| NNE | 4.384E-06 | 1.491E-06 | 8.431E-07 | 4.603E-07 | 2.169E-07 | 1.335E-07 | 9.317E-08 | 6.999E-08 | 5.630E-08 | 4.687E-08 | 3.947E-08 |
| NE | 6.279E-06 | 2.172E-06 | 1.227E-06 | 6.467E-07 | 2.789E-07 | 1.622E-07 | 1.094E-07 | 8.056E-08 | 6.285E-08 | 5.106E-08 | 4.273E-08 |
| ENE | 3.470E-06 | 1.266E-06 | 7.259E-07 | 3.856E-07 | 1.707E-07 | 1.026E-07 | 7.140E-08 | 5.407E-08 | 4.321E-08 | 3.583E-08 | 3.053E-08 |
| E | 2.338E-06 | 9.151E-07 | 5.385E-07 | 2.882E-07 | 1.281E-07 | 7.707E-08 | 5.369E-08 | 4.068E-08 | 3.252E-08 | 2.697E-08 | 2.299E-08 |
| ESE | 2.623E-06 | 1.018E-06 | 5.898E-07 | 3.125E-07 | 1.366E-07 | 8.125E-08 | 5.613E-08 | 4.230E-08 | 3.370E-08 | 2.790E-08 | 2.376E-08 |
| SE | 2.306E-06 | 8.907E-07 | 5.144E-07 | 2.726E-07 | 1.189E-07 | 7.060E-08 | 4.875E-08 | 3.674E-08 | 2.928E-08 | 2.424E-08 | 2.064E-08 |
| SSE | 2.739E-06 | 9.777E-07 | 5.517E-07 | 2.912E-07 | 1.274E-07 | 7.564E-08 | 5.197E-08 | 3.887E-08 | 3.071E-08 | 2.520E-08 | 2.127E-08 |
| S | 2.821E-06 | 9.464E-07 | 5.235E-07 | 2.752E-07 | 1.197E-07 | 7.059E-08 | 4.811E-08 | 3.571E-08 | 2.803E-08 | 2.288E-08 | 1.923E-08 |
| SSW | 2.205E-06 | 7.580E-07 | 4.273E-07 | 2.272E-07 | 1.003E-07 | 5.973E-08 | 4.112E-08 | 3.079E-08 | 2.434E-08 | 1.998E-08 | 1.686E-08 |
| SW | 1.297E-06 | 4.751E-07 | 2.927E-07 | 1.795E-07 | 9.708E-08 | 6.307E-08 | 4.485E-08 | 3.382E-08 | 2.659E-08 | 2.159E-08 | 1.797E-08 |
| WSW | 1.299E-06 | 4.660E-07 | 2.781E-07 | 1.644E-07 | 8.402E-08 | 5.278E-08 | 3.675E-08 | 2.733E-08 | 2.128E-08 | 1.716E-08 | 1.435E-08 |
| W | 1.811E-06 | 6.138E-07 | 3.526E-07 | 2.011E-07 | 9.778E-08 | 5.999E-08 | 4.129E-08 | 3.052E-08 | 2.370E-08 | 1.908E-08 | 1.579E-08 |
| WNW | 2.106E-06 | 6.937E-07 | 3.857E-07 | 2.186E-07 | 1.080E-07 | 6.724E-08 | 4.682E-08 | 3.493E-08 | 2.733E-08 | 2.214E-08 | 1.843E-08 |
| NW | 2.088E-06 | 6.839E-07 | 3.671E-07 | 2.023E-07 | 9.803E-08 | 6.078E-08 | 4.232E-08 | 3.162E-08 | 2.479E-08 | 2.013E-08 | 1.686E-08 |
| NNW | 2.006E-06 | 6.514E-07 | 3.496E-07 | 1.901E-07 | 9.111E-08 | 5.674E-08 | 3.987E-08 | 3.010E-08 | 2.383E-08 | 1.953E-08 | 1.658E-08 |

## Table 2.7-104 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 1.910E-08 | 1.187E-08 | 8.698E-09 | 5.886E-09 | 4.463E-09 | 3.575E-09 | 2.941E-09 | 2.446E-09 | 2.058E-09 | 1.764E-09 | 1.537E-09 |
| NNE | 3.395E-08 | 1.970E-08 | 1.373E-08 | 8.609E-09 | 6.170E-09 | 4.760E-09 | 3.850E-09 | 3.219E-09 | 2.757E-09 | 2.406E-09 | 2.131E-09 |
| NE | 3.663E-08 | 2.175E-08 | 1.556E-08 | 1.024E-08 | 7.650E-09 | 6.119E-09 | 5.114E-09 | 4.406E-09 | 3.881E-09 | 3.476E-09 | 3.156E-09 |
| ENE | 2.661E-08 | 1.686E-08 | 1.258E-08 | 8.741E-09 | 6.775E-09 | 5.576E-09 | 4.771E-09 | 4.193E-09 | 3.758E-09 | 3.419E-09 | 3.148E-09 |
| E | 2.006E-08 | 1.258E-08 | 9.287E-09 | 6.322E-09 | 4.800E-09 | 3.866E-09 | 3.234E-09 | 2.778E-09 | 2.434E-09 | 2.164E-09 | 1.948E-09 |
| ESE | 2.074E-08 | 1.318E-08 | 9.878E-09 | 6.930E-09 | 5.408E-09 | 4.465E-09 | 3.822E-09 | 3.354E-09 | 2.998E-09 | 2.717E-09 | 2.489E-09 |
| SE | 1.801E-08 | 1.145E-08 | 8.561E-09 | 5.968E-09 | 4.631E-09 | 3.809E-09 | 3.253E-09 | 2.851E-09 | 2.547E-09 | 2.310E-09 | 2.119E-09 |
| SSE | 1.838E-08 | 1.158E-08 | 8.712E-09 | 6.301E-09 | 5.162E-09 | 4.508E-09 | 4.077E-09 | 3.757E-09 | 3.492E-09 | 3.252E-09 | 3.023E-09 |
| S | 1.654E-08 | 1.006E-08 | 7.361E-09 | 5.053E-09 | 3.934E-09 | 3.277E-09 | 2.846E-09 | 2.541E-09 | 2.311E-09 | 2.129E-09 | 1.980E-09 |
| SSW | 1.456E-08 | 8.902E-09 | 6.482E-09 | 4.355E-09 | 3.295E-09 | 2.662E-09 | 2.243E-09 | 1.945E-09 | 1.723E-09 | 1.551E-09 | 1.413E-09 |
| SW | 1.527E-08 | 8.546E-09 | 5.769E-09 | 3.444E-09 | 2.382E-09 | 1.787E-09 | 1.413E-09 | 1.159E-09 | 9.769E-10 | 8.403E-10 | 7.346E-10 |
| WSW | 1.226E-08 | 6.802E-09 | 4.579E-09 | 2.732E-09 | 1.892E-09 | 1.422E-09 | 1.126E-09 | 9.239E-10 | 7.781E-10 | 6.684E-10 | 5.829E-10 |
| W | 1.336E-08 | 7.676E-09 | 5.319E-09 | 3.327E-09 | 2.383E-09 | 1.821E-09 | 1.439E-09 | 1.170E-09 | 9.776E-10 | 8.350E-10 | 7.256E-10 |
| WNW | 1.568E-08 | 9.327E-09 | 6.666E-09 | 4.417E-09 | 3.300E-09 | 2.561E-09 | 2.022E-09 | 1.651E-09 | 1.386E-09 | 1.189E-09 | 1.037E-09 |
| NW | 1.443E-08 | 8.538E-09 | 6.074E-09 | 3.992E-09 | 2.999E-09 | 2.400E-09 | 1.979E-09 | 1.653E-09 | 1.394E-09 | 1.199E-09 | 1.048E-09 |
| NNW | 1.438E-08 | 8.993E-09 | 6.673E-09 | 4.634E-09 | 3.562E-09 | 2.835E-09 | 2.275E-09 | 1.864E-09 | 1.569E-09 | 1.349E-09 | 1.178E-09 |

## Table 2.7-104 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

| | X/Q ($sec/m^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 4.076E-07 | 1.229E-07 | 5.279E-08 | 3.181E-08 | 2.215E-08 | 1.207E-08 | 5.879E-09 | 3.558E-09 | 2.439E-09 | 1.767E-09 |
| NNE | 8.168E-07 | 2.339E-07 | 9.466E-08 | 5.662E-08 | 3.962E-08 | 2.021E-08 | 8.663E-09 | 4.772E-09 | 3.223E-09 | 2.408E-09 |
| NE | 1.179E-06 | 3.088E-07 | 1.119E-07 | 6.342E-08 | 4.294E-08 | 2.231E-08 | 1.027E-08 | 6.126E-09 | 4.408E-09 | 3.477E-09 |
| ENE | 6.947E-07 | 1.882E-07 | 7.278E-08 | 4.350E-08 | 3.065E-08 | 1.712E-08 | 8.720E-09 | 5.574E-09 | 4.192E-09 | 3.419E-09 |
| E | 5.110E-07 | 1.410E-07 | 5.472E-08 | 3.274E-08 | 2.308E-08 | 1.278E-08 | 6.304E-09 | 3.862E-09 | 2.777E-09 | 2.164E-09 |
| ESE | 5.617E-07 | 1.511E-07 | 5.730E-08 | 3.395E-08 | 2.387E-08 | 1.339E-08 | 6.909E-09 | 4.459E-09 | 3.352E-09 | 2.716E-09 |
| SE | 4.905E-07 | 1.316E-07 | 4.977E-08 | 2.949E-08 | 2.073E-08 | 1.162E-08 | 5.950E-09 | 3.806E-09 | 2.850E-09 | 2.309E-09 |
| SSE | 5.306E-07 | 1.408E-07 | 5.304E-08 | 3.094E-08 | 2.137E-08 | 1.182E-08 | 6.331E-09 | 4.510E-09 | 3.748E-09 | 3.238E-09 |
| S | 5.071E-07 | 1.324E-07 | 4.914E-08 | 2.826E-08 | 1.931E-08 | 1.030E-08 | 5.068E-09 | 3.280E-09 | 2.540E-09 | 2.128E-09 |
| SSW | 4.119E-07 | 1.105E-07 | 4.195E-08 | 2.452E-08 | 1.693E-08 | 9.083E-09 | 4.357E-09 | 2.663E-09 | 1.946E-09 | 1.551E-09 |
| SW | 2.829E-07 | 1.003E-07 | 4.530E-08 | 2.675E-08 | 1.804E-08 | 8.805E-09 | 3.489E-09 | 1.796E-09 | 1.162E-09 | 8.416E-10 |
| WSW | 2.693E-07 | 8.799E-08 | 3.726E-08 | 2.144E-08 | 1.441E-08 | 7.026E-09 | 2.769E-09 | 1.429E-09 | 9.261E-10 | 6.692E-10 |
| W | 3.433E-07 | 1.039E-07 | 4.197E-08 | 2.388E-08 | 1.586E-08 | 7.892E-09 | 3.350E-09 | 1.818E-09 | 1.173E-09 | 8.367E-10 |
| WNW | 3.799E-07 | 1.144E-07 | 4.751E-08 | 2.752E-08 | 1.851E-08 | 9.556E-09 | 4.420E-09 | 2.543E-09 | 1.656E-09 | 1.191E-09 |
| NW | 3.642E-07 | 1.046E-07 | 4.296E-08 | 2.497E-08 | 1.693E-08 | 8.752E-09 | 4.013E-09 | 2.391E-09 | 1.647E-09 | 1.201E-09 |
| NNW | 3.458E-07 | 9.784E-08 | 4.046E-08 | 2.398E-08 | 1.664E-08 | 9.158E-09 | 4.611E-09 | 2.805E-09 | 1.869E-09 | 1.351E-09 |

## Table 2.7-105 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

| Annual Average X/Q ($sec/m^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** |
| N | 2.200E-06 | 7.400E-07 | 4.172E-07 | 2.331E-07 | 1.150E-07 | 7.299E-08 | 5.193E-08 | 3.951E-08 | 3.145E-08 | 2.587E-08 | 2.192E-08 |
| NNE | 4.382E-06 | 1.489E-06 | 8.420E-07 | 4.595E-07 | 2.164E-07 | 1.331E-07 | 9.282E-08 | 6.967E-08 | 5.600E-08 | 4.659E-08 | 3.920E-08 |
| NE | 6.277E-06 | 2.170E-06 | 1.225E-06 | 6.457E-07 | 2.782E-07 | 1.616E-07 | 1.089E-07 | 8.018E-08 | 6.251E-08 | 5.075E-08 | 4.244E-08 |
| ENE | 3.468E-06 | 1.265E-06 | 7.248E-07 | 3.848E-07 | 1.702E-07 | 1.022E-07 | 7.106E-08 | 5.377E-08 | 4.293E-08 | 3.557E-08 | 3.028E-08 |
| E | 2.337E-06 | 9.142E-07 | 5.377E-07 | 2.876E-07 | 1.277E-07 | 7.677E-08 | 5.343E-08 | 4.044E-08 | 3.230E-08 | 2.677E-08 | 2.279E-08 |
| ESE | 2.622E-06 | 1.017E-06 | 5.890E-07 | 3.118E-07 | 1.362E-07 | 8.093E-08 | 5.586E-08 | 4.205E-08 | 3.347E-08 | 2.769E-08 | 2.356E-08 |
| SE | 2.305E-06 | 8.898E-07 | 5.136E-07 | 2.720E-07 | 1.185E-07 | 7.031E-08 | 4.851E-08 | 3.652E-08 | 2.908E-08 | 2.406E-08 | 2.046E-08 |
| SSE | 2.737E-06 | 9.767E-07 | 5.509E-07 | 2.906E-07 | 1.270E-07 | 7.535E-08 | 5.173E-08 | 3.865E-08 | 3.051E-08 | 2.502E-08 | 2.110E-08 |
| S | 2.820E-06 | 9.455E-07 | 5.228E-07 | 2.747E-07 | 1.194E-07 | 7.033E-08 | 4.789E-08 | 3.552E-08 | 2.786E-08 | 2.272E-08 | 1.907E-08 |
| SSW | 2.204E-06 | 7.573E-07 | 4.267E-07 | 2.268E-07 | 1.000E-07 | 5.952E-08 | 4.094E-08 | 3.062E-08 | 2.419E-08 | 1.984E-08 | 1.673E-08 |
| SW | 1.296E-06 | 4.747E-07 | 2.923E-07 | 1.792E-07 | 9.686E-08 | 6.288E-08 | 4.468E-08 | 3.367E-08 | 2.645E-08 | 2.146E-08 | 1.785E-08 |
| WSW | 1.298E-06 | 4.656E-07 | 2.777E-07 | 1.641E-07 | 8.385E-08 | 5.263E-08 | 3.663E-08 | 2.722E-08 | 2.118E-08 | 1.706E-08 | 1.427E-08 |
| W | 1.810E-06 | 6.134E-07 | 3.522E-07 | 2.008E-07 | 9.759E-08 | 5.983E-08 | 4.115E-08 | 3.039E-08 | 2.358E-08 | 1.897E-08 | 1.569E-08 |
| WNW | 2.105E-06 | 6.931E-07 | 3.853E-07 | 2.182E-07 | 1.077E-07 | 6.704E-08 | 4.664E-08 | 3.477E-08 | 2.718E-08 | 2.201E-08 | 1.830E-08 |
| NW | 2.087E-06 | 6.833E-07 | 3.666E-07 | 2.019E-07 | 9.779E-08 | 6.059E-08 | 4.215E-08 | 3.147E-08 | 2.465E-08 | 2.001E-08 | 1.674E-08 |
| NNW | 2.005E-06 | 6.508E-07 | 3.491E-07 | 1.898E-07 | 9.088E-08 | 5.655E-08 | 3.970E-08 | 2.995E-08 | 2.369E-08 | 1.940E-08 | 1.646E-08 |

## Table 2.7-105 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

| | Annual Average X/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 1.894E-08 | 1.172E-08 | 8.547E-09 | 5.728E-09 | 4.299E-09 | 3.408E-09 | 2.774E-09 | 2.283E-09 | 1.901E-09 | 1.614E-09 | 1.393E-09 |
| NNE | 3.369E-08 | 1.947E-08 | 1.351E-08 | 8.401E-09 | 5.969E-09 | 4.565E-09 | 3.661E-09 | 3.034E-09 | 2.576E-09 | 2.229E-09 | 1.957E-09 |
| NE | 3.635E-08 | 2.150E-08 | 1.532E-08 | 1.000E-08 | 7.406E-09 | 5.873E-09 | 4.865E-09 | 4.153E-09 | 3.624E-09 | 3.216E-09 | 2.891E-09 |
| ENE | 2.637E-08 | 1.663E-08 | 1.235E-08 | 8.495E-09 | 6.517E-09 | 5.307E-09 | 4.492E-09 | 3.904E-09 | 3.461E-09 | 3.114E-09 | 2.834E-09 |
| E | 1.987E-08 | 1.240E-08 | 9.105E-09 | 6.131E-09 | 4.605E-09 | 3.667E-09 | 3.033E-09 | 2.576E-09 | 2.232E-09 | 1.962E-09 | 1.746E-09 |
| ESE | 2.054E-08 | 1.298E-08 | 9.682E-09 | 6.719E-09 | 5.184E-09 | 4.232E-09 | 3.581E-09 | 3.106E-09 | 2.743E-09 | 2.457E-09 | 2.225E-09 |
| SE | 1.784E-08 | 1.128E-08 | 8.398E-09 | 5.795E-09 | 4.450E-09 | 3.621E-09 | 3.059E-09 | 2.652E-09 | 2.343E-09 | 2.101E-09 | 1.906E-09 |
| SSE | 1.822E-08 | 1.142E-08 | 8.557E-09 | 6.131E-09 | 4.973E-09 | 4.298E-09 | 3.846E-09 | 3.505E-09 | 3.221E-09 | 2.966E-09 | 2.725E-09 |
| S | 1.639E-08 | 9.931E-09 | 7.233E-09 | 4.921E-09 | 3.797E-09 | 3.134E-09 | 2.697E-09 | 2.385E-09 | 2.149E-09 | 1.961E-09 | 1.806E-09 |
| SSW | 1.443E-08 | 8.789E-09 | 6.373E-09 | 4.244E-09 | 3.183E-09 | 2.548E-09 | 2.127E-09 | 1.828E-09 | 1.604E-09 | 1.429E-09 | 1.289E-09 |
| SW | 1.515E-08 | 8.446E-09 | 5.678E-09 | 3.361E-09 | 2.304E-09 | 1.714E-09 | 1.343E-09 | 1.092E-09 | 9.120E-10 | 7.774E-10 | 6.736E-10 |
| WSW | 1.217E-08 | 6.731E-09 | 4.514E-09 | 2.674E-09 | 1.839E-09 | 1.372E-09 | 1.078E-09 | 8.781E-10 | 7.342E-10 | 6.260E-10 | 5.419E-10 |
| W | 1.327E-08 | 7.596E-09 | 5.245E-09 | 3.258E-09 | 2.316E-09 | 1.757E-09 | 1.379E-09 | 1.113E-09 | 9.236E-10 | 7.835E-10 | 6.760E-10 |
| WNW | 1.556E-08 | 9.221E-09 | 6.565E-09 | 4.316E-09 | 3.198E-09 | 2.462E-09 | 1.929E-09 | 1.563E-09 | 1.302E-09 | 1.108E-09 | 9.590E-10 |
| NW | 1.432E-08 | 8.438E-09 | 5.980E-09 | 3.902E-09 | 2.910E-09 | 2.312E-09 | 1.893E-09 | 1.570E-09 | 1.315E-09 | 1.123E-09 | 9.745E-10 |
| NNW | 1.426E-08 | 8.880E-09 | 6.560E-09 | 4.515E-09 | 3.440E-09 | 2.713E-09 | 2.158E-09 | 1.752E-09 | 1.462E-09 | 1.246E-09 | 1.080E-09 |

## Table 2.7-105 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

**X/Q (sec/m$^3$) for Each Segment**

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 4.071E-07 | 1.226E-07 | 5.258E-08 | 3.163E-08 | 2.199E-08 | 1.191E-08 | 5.719E-09 | 3.392E-09 | 2.278E-09 | 1.617E-09 |
| NNE | 8.159E-07 | 2.334E-07 | 9.431E-08 | 5.632E-08 | 3.935E-08 | 1.998E-08 | 8.456E-09 | 4.578E-09 | 3.039E-09 | 2.231E-09 |
| NE | 1.178E-06 | 3.081E-07 | 1.115E-07 | 6.308E-08 | 4.264E-08 | 2.205E-08 | 1.003E-08 | 5.879E-09 | 4.155E-09 | 3.217E-09 |
| ENE | 6.937E-07 | 1.877E-07 | 7.244E-08 | 4.322E-08 | 3.040E-08 | 1.689E-08 | 8.472E-09 | 5.304E-09 | 3.903E-09 | 3.113E-09 |
| E | 5.102E-07 | 1.406E-07 | 5.446E-08 | 3.252E-08 | 2.289E-08 | 1.259E-08 | 6.114E-09 | 3.664E-09 | 2.576E-09 | 1.962E-09 |
| ESE | 5.609E-07 | 1.507E-07 | 5.702E-08 | 3.372E-08 | 2.366E-08 | 1.320E-08 | 6.695E-09 | 4.226E-09 | 3.104E-09 | 2.456E-09 |
| SE | 4.898E-07 | 1.312E-07 | 4.953E-08 | 2.929E-08 | 2.055E-08 | 1.146E-08 | 5.776E-09 | 3.617E-09 | 2.651E-09 | 2.101E-09 |
| SSE | 5.298E-07 | 1.404E-07 | 5.280E-08 | 3.074E-08 | 2.119E-08 | 1.166E-08 | 6.156E-09 | 4.297E-09 | 3.494E-09 | 2.952E-09 |
| S | 5.064E-07 | 1.321E-07 | 4.893E-08 | 2.809E-08 | 1.916E-08 | 1.017E-08 | 4.935E-09 | 3.136E-09 | 2.384E-09 | 1.959E-09 |
| SSW | 4.113E-07 | 1.102E-07 | 4.177E-08 | 2.437E-08 | 1.680E-08 | 8.969E-09 | 4.246E-09 | 2.549E-09 | 1.828E-09 | 1.429E-09 |
| SW | 2.826E-07 | 1.001E-07 | 4.513E-08 | 2.661E-08 | 1.792E-08 | 8.706E-09 | 3.406E-09 | 1.723E-09 | 1.095E-09 | 7.788E-10 |
| WSW | 2.690E-07 | 8.782E-08 | 3.713E-08 | 2.134E-08 | 1.432E-08 | 6.955E-09 | 2.712E-09 | 1.379E-09 | 8.804E-10 | 6.269E-10 |
| W | 3.430E-07 | 1.037E-07 | 4.183E-08 | 2.377E-08 | 1.577E-08 | 7.813E-09 | 3.281E-09 | 1.755E-09 | 1.117E-09 | 7.852E-10 |
| WNW | 3.794E-07 | 1.142E-07 | 4.733E-08 | 2.738E-08 | 1.839E-08 | 9.449E-09 | 4.319E-09 | 2.445E-09 | 1.568E-09 | 1.110E-09 |
| NW | 3.638E-07 | 1.044E-07 | 4.279E-08 | 2.483E-08 | 1.681E-08 | 8.653E-09 | 3.923E-09 | 2.304E-09 | 1.565E-09 | 1.125E-09 |
| NNW | 3.453E-07 | 9.760E-08 | 4.029E-08 | 2.384E-08 | 1.651E-08 | 9.044E-09 | 4.492E-09 | 2.685E-09 | 1.758E-09 | 1.249E-09 |

## Table 2.7-106 Annual Average $\chi$/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

| | Annual Average $\chi$/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1** | **1.5** | **2** | **2.5** | **3** | **3.5** | **4** | **4.5** |
| N | 2.100E-06 | 6.859E-07 | 3.794E-07 | 2.108E-07 | 1.038E-07 | 6.583E-08 | 4.678E-08 | 3.555E-08 | 2.824E-08 | 2.318E-08 | 1.962E-08 |
| NNE | 4.171E-06 | 1.376E-06 | 7.631E-07 | 4.131E-07 | 1.934E-07 | 1.185E-07 | 8.241E-08 | 6.168E-08 | 4.956E-08 | 4.121E-08 | 3.460E-08 |
| NE | 5.946E-06 | 1.996E-06 | 1.105E-06 | 5.742E-07 | 2.430E-07 | 1.397E-07 | 9.347E-08 | 6.845E-08 | 5.317E-08 | 4.303E-08 | 3.590E-08 |
| ENE | 3.288E-06 | 1.170E-06 | 6.586E-07 | 3.453E-07 | 1.507E-07 | 9.000E-08 | 6.249E-08 | 4.727E-08 | 3.776E-08 | 3.132E-08 | 2.668E-08 |
| E | 2.217E-06 | 8.506E-07 | 4.923E-07 | 2.603E-07 | 1.141E-07 | 6.828E-08 | 4.747E-08 | 3.594E-08 | 2.872E-08 | 2.382E-08 | 2.030E-08 |
| ESE | 2.488E-06 | 9.466E-07 | 5.394E-07 | 2.821E-07 | 1.215E-07 | 7.168E-08 | 4.934E-08 | 3.711E-08 | 2.954E-08 | 2.445E-08 | 2.081E-08 |
| SE | 2.187E-06 | 8.283E-07 | 4.703E-07 | 2.460E-07 | 1.056E-07 | 6.221E-08 | 4.280E-08 | 3.220E-08 | 2.564E-08 | 2.122E-08 | 1.807E-08 |
| SSE | 2.595E-06 | 9.033E-07 | 5.004E-07 | 2.606E-07 | 1.121E-07 | 6.601E-08 | 4.513E-08 | 3.363E-08 | 2.650E-08 | 2.170E-08 | 1.828E-08 |
| S | 2.672E-06 | 8.699E-07 | 4.717E-07 | 2.446E-07 | 1.045E-07 | 6.091E-08 | 4.119E-08 | 3.040E-08 | 2.376E-08 | 1.932E-08 | 1.618E-08 |
| SSW | 2.088E-06 | 6.971E-07 | 3.851E-07 | 2.021E-07 | 8.778E-08 | 5.185E-08 | 3.552E-08 | 2.651E-08 | 2.090E-08 | 1.713E-08 | 1.443E-08 |
| SW | 1.238E-06 | 4.410E-07 | 2.686E-07 | 1.653E-07 | 8.976E-08 | 5.821E-08 | 4.122E-08 | 3.091E-08 | 2.417E-08 | 1.951E-08 | 1.615E-08 |
| WSW | 1.241E-06 | 4.331E-07 | 2.549E-07 | 1.508E-07 | 7.707E-08 | 4.823E-08 | 3.341E-08 | 2.469E-08 | 1.911E-08 | 1.531E-08 | 1.275E-08 |
| W | 1.727E-06 | 5.682E-07 | 3.211E-07 | 1.824E-07 | 8.826E-08 | 5.383E-08 | 3.680E-08 | 2.702E-08 | 2.084E-08 | 1.667E-08 | 1.372E-08 |
| WNW | 2.017E-06 | 6.461E-07 | 3.527E-07 | 1.991E-07 | 9.796E-08 | 6.072E-08 | 4.204E-08 | 3.118E-08 | 2.426E-08 | 1.955E-08 | 1.618E-08 |
| NW | 2.004E-06 | 6.395E-07 | 3.367E-07 | 1.843E-07 | 8.878E-08 | 5.474E-08 | 3.789E-08 | 2.815E-08 | 2.194E-08 | 1.772E-08 | 1.477E-08 |
| NNW | 1.919E-06 | 6.061E-07 | 3.185E-07 | 1.718E-07 | 8.178E-08 | 5.071E-08 | 3.549E-08 | 2.668E-08 | 2.104E-08 | 1.718E-08 | 1.455E-08 |

## Table 2.7-106 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

**Annual Average X/Q (sec/m$^3$)**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 1.694E-08 | 1.048E-08 | 7.645E-09 | 5.142E-09 | 3.843E-09 | 2.946E-09 | 2.319E-09 | 1.867E-09 | 1.526E-09 | 1.273E-09 | 1.082E-09 |
| NNE | 2.968E-08 | 1.701E-08 | 1.172E-08 | 7.221E-09 | 5.101E-09 | 3.888E-09 | 3.112E-09 | 2.576E-09 | 2.178E-09 | 1.879E-09 | 1.644E-09 |
| NE | 3.069E-08 | 1.810E-08 | 1.288E-08 | 8.413E-09 | 6.250E-09 | 4.981E-09 | 4.151E-09 | 3.567E-09 | 3.122E-09 | 2.781E-09 | 2.508E-09 |
| ENE | 2.325E-08 | 1.477E-08 | 1.102E-08 | 7.657E-09 | 5.928E-09 | 4.874E-09 | 4.165E-09 | 3.655E-09 | 3.256E-09 | 2.947E-09 | 2.694E-09 |
| E | 1.771E-08 | 1.111E-08 | 8.190E-09 | 5.551E-09 | 4.193E-09 | 3.360E-09 | 2.797E-09 | 2.391E-09 | 2.084E-09 | 1.844E-09 | 1.651E-09 |
| ESE | 1.816E-08 | 1.155E-08 | 8.657E-09 | 6.066E-09 | 4.724E-09 | 3.893E-09 | 3.324E-09 | 2.910E-09 | 2.593E-09 | 2.343E-09 | 2.140E-09 |
| SE | 1.576E-08 | 1.003E-08 | 7.502E-09 | 5.221E-09 | 4.042E-09 | 3.317E-09 | 2.826E-09 | 2.471E-09 | 2.198E-09 | 1.983E-09 | 1.806E-09 |
| SSE | 1.577E-08 | 9.948E-09 | 7.494E-09 | 5.448E-09 | 4.493E-09 | 3.949E-09 | 3.590E-09 | 3.296E-09 | 2.991E-09 | 2.712E-09 | 2.454E-09 |
| S | 1.388E-08 | 8.403E-09 | 6.126E-09 | 4.196E-09 | 3.269E-09 | 2.730E-09 | 2.378E-09 | 2.128E-09 | 1.931E-09 | 1.773E-09 | 1.632E-09 |
| SSW | 1.243E-08 | 7.588E-09 | 5.510E-09 | 3.685E-09 | 2.779E-09 | 2.240E-09 | 1.884E-09 | 1.631E-09 | 1.435E-09 | 1.285E-09 | 1.162E-09 |
| SW | 1.365E-08 | 7.475E-09 | 4.954E-09 | 2.871E-09 | 1.938E-09 | 1.426E-09 | 1.109E-09 | 8.945E-10 | 7.408E-10 | 6.274E-10 | 5.398E-10 |
| WSW | 1.084E-08 | 5.877E-09 | 3.881E-09 | 2.246E-09 | 1.519E-09 | 1.119E-09 | 8.678E-10 | 6.921E-10 | 5.650E-10 | 4.707E-10 | 3.987E-10 |
| W | 1.154E-08 | 6.511E-09 | 4.445E-09 | 2.717E-09 | 1.866E-09 | 1.360E-09 | 1.035E-09 | 8.132E-10 | 6.589E-10 | 5.467E-10 | 4.623E-10 |
| WNW | 1.370E-08 | 8.038E-09 | 5.683E-09 | 3.692E-09 | 2.622E-09 | 1.946E-09 | 1.481E-09 | 1.169E-09 | 9.520E-10 | 7.934E-10 | 6.736E-10 |
| NW | 1.258E-08 | 7.330E-09 | 5.149E-09 | 3.330E-09 | 2.449E-09 | 1.878E-09 | 1.484E-09 | 1.200E-09 | 9.822E-10 | 8.212E-10 | 6.992E-10 |
| NNW | 1.258E-08 | 7.832E-09 | 5.786E-09 | 3.990E-09 | 2.935E-09 | 2.221E-09 | 1.719E-09 | 1.363E-09 | 1.113E-09 | 9.296E-10 | 7.910E-10 |

## Table 2.7-106 Annual Average $\chi$/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

| | $\chi$/Q (sec/m$^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| Sector | 0.5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| N | 3.725E-07 | 1.107E-07 | 4.737E-08 | 2.840E-08 | 1.968E-08 | 1.065E-08 | 5.121E-09 | 2.935E-09 | 1.866E-09 | 1.277E-09 |
| NNE | 7.437E-07 | 2.089E-07 | 8.376E-08 | 4.984E-08 | 3.474E-08 | 1.748E-08 | 7.279E-09 | 3.901E-09 | 2.578E-09 | 1.881E-09 |
| NE | 1.067E-06 | 2.707E-07 | 9.578E-08 | 5.367E-08 | 3.608E-08 | 1.858E-08 | 8.445E-09 | 4.987E-09 | 3.564E-09 | 2.781E-09 |
| ENE | 6.331E-07 | 1.670E-07 | 6.374E-08 | 3.802E-08 | 2.679E-08 | 1.499E-08 | 7.637E-09 | 4.872E-09 | 3.649E-09 | 2.945E-09 |
| E | 4.688E-07 | 1.262E-07 | 4.841E-08 | 2.892E-08 | 2.039E-08 | 1.128E-08 | 5.534E-09 | 3.357E-09 | 2.390E-09 | 1.843E-09 |
| ESE | 5.155E-07 | 1.350E-07 | 5.041E-08 | 2.976E-08 | 2.091E-08 | 1.173E-08 | 6.046E-09 | 3.887E-09 | 2.908E-09 | 2.342E-09 |
| SE | 4.502E-07 | 1.175E-07 | 4.374E-08 | 2.583E-08 | 1.815E-08 | 1.018E-08 | 5.204E-09 | 3.314E-09 | 2.468E-09 | 1.981E-09 |
| SSE | 4.833E-07 | 1.246E-07 | 4.610E-08 | 2.671E-08 | 1.837E-08 | 1.015E-08 | 5.478E-09 | 3.950E-09 | 3.264E-09 | 2.699E-09 |
| S | 4.592E-07 | 1.162E-07 | 4.213E-08 | 2.397E-08 | 1.626E-08 | 8.608E-09 | 4.213E-09 | 2.733E-09 | 2.124E-09 | 1.767E-09 |
| SSW | 3.731E-07 | 9.722E-08 | 3.627E-08 | 2.107E-08 | 1.449E-08 | 7.741E-09 | 3.688E-09 | 2.241E-09 | 1.629E-09 | 1.284E-09 |
| SW | 2.610E-07 | 9.252E-08 | 4.163E-08 | 2.432E-08 | 1.622E-08 | 7.726E-09 | 2.919E-09 | 1.436E-09 | 8.971E-10 | 6.286E-10 |
| WSW | 2.482E-07 | 8.063E-08 | 3.388E-08 | 1.926E-08 | 1.280E-08 | 6.092E-09 | 2.286E-09 | 1.125E-09 | 6.939E-10 | 4.719E-10 |
| W | 3.144E-07 | 9.387E-08 | 3.743E-08 | 2.102E-08 | 1.379E-08 | 6.711E-09 | 2.723E-09 | 1.365E-09 | 8.178E-10 | 5.487E-10 |
| WNW | 3.496E-07 | 1.039E-07 | 4.268E-08 | 2.444E-08 | 1.626E-08 | 8.249E-09 | 3.659E-09 | 1.940E-09 | 1.175E-09 | 7.960E-10 |
| NW | 3.362E-07 | 9.487E-08 | 3.849E-08 | 2.211E-08 | 1.483E-08 | 7.528E-09 | 3.343E-09 | 1.873E-09 | 1.198E-09 | 8.237E-10 |
| NNW | 3.172E-07 | 8.797E-08 | 3.602E-08 | 2.118E-08 | 1.460E-08 | 7.978E-09 | 3.920E-09 | 2.211E-09 | 1.369E-09 | 9.325E-10 |

## Table 2.7-107 Annual Average D/Q Values for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 1 of 3)

Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors

| | Distances in Miles | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 0.25 | 0.50 | 0.75 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 |
| N | 2.322E-08 | 1.111E-08 | 6.853E-09 | 3.611E-09 | 1.379E-09 | 7.339E-10 | 4.555E-10 | 3.107E-10 | 2.257E-10 | 1.714E-10 | 1.347E-10 |
| NNE | 5.010E-08 | 2.258E-08 | 1.354E-08 | 7.118E-09 | 2.730E-09 | 1.457E-09 | 9.061E-10 | 6.186E-10 | 4.530E-10 | 3.476E-10 | 2.725E-10 |
| NE | 6.121E-08 | 2.429E-08 | 1.354E-08 | 6.723E-09 | 2.451E-09 | 1.251E-09 | 7.538E-10 | 5.032E-10 | 3.598E-10 | 2.703E-10 | 2.107E-10 |
| ENE | 3.019E-08 | 1.357E-08 | 7.927E-09 | 4.002E-09 | 1.453E-09 | 7.468E-10 | 4.525E-10 | 3.038E-10 | 2.184E-10 | 1.649E-10 | 1.291E-10 |
| E | 2.414E-08 | 1.163E-08 | 6.950E-09 | 3.538E-09 | 1.283E-09 | 6.618E-10 | 4.022E-10 | 2.707E-10 | 1.951E-10 | 1.476E-10 | 1.159E-10 |
| ESE | 2.671E-08 | 1.288E-08 | 7.696E-09 | 3.914E-09 | 1.417E-09 | 7.300E-10 | 4.433E-10 | 2.983E-10 | 2.149E-10 | 1.626E-10 | 1.276E-10 |
| SE | 2.176E-08 | 1.069E-08 | 6.415E-09 | 3.260E-09 | 1.175E-09 | 6.045E-10 | 3.666E-10 | 2.465E-10 | 1.776E-10 | 1.344E-10 | 1.055E-10 |
| SSE | 2.277E-08 | 1.030E-08 | 6.030E-09 | 3.044E-09 | 1.103E-09 | 5.668E-10 | 3.433E-10 | 2.304E-10 | 1.657E-10 | 1.251E-10 | 9.798E-11 |
| S | 2.165E-08 | 8.836E-09 | 4.987E-09 | 2.491E-09 | 9.095E-10 | 4.660E-10 | 2.815E-10 | 1.884E-10 | 1.350E-10 | 1.015E-10 | 7.926E-11 |
| SSW | 1.841E-08 | 7.440E-09 | 4.173E-09 | 2.081E-09 | 7.613E-10 | 3.901E-10 | 2.357E-10 | 1.577E-10 | 1.129E-10 | 8.493E-11 | 6.627E-11 |
| SW | 1.715E-08 | 8.392E-09 | 5.677E-09 | 3.243E-09 | 1.365E-09 | 7.678E-10 | 4.932E-10 | 3.435E-10 | 2.525E-10 | 1.930E-10 | 1.520E-10 |
| WSW | 2.025E-08 | 9.844E-09 | 6.443E-09 | 3.517E-09 | 1.416E-09 | 7.714E-10 | 4.853E-10 | 3.336E-10 | 2.434E-10 | 1.852E-10 | 1.498E-10 |
| W | 2.787E-08 | 1.351E-08 | 8.102E-09 | 4.448E-09 | 1.741E-09 | 9.184E-10 | 5.645E-10 | 3.820E-10 | 2.758E-10 | 2.085E-10 | 1.632E-10 |
| WNW | 2.820E-08 | 1.463E-08 | 9.352E-09 | 4.883E-09 | 1.865E-09 | 9.836E-10 | 6.058E-10 | 4.111E-10 | 2.976E-10 | 2.257E-10 | 1.772E-10 |
| NW | 2.596E-08 | 1.394E-08 | 8.683E-09 | 4.622E-09 | 1.725E-09 | 9.056E-10 | 5.569E-10 | 3.779E-10 | 2.738E-10 | 2.080E-10 | 1.636E-10 |
| NNW | 2.224E-08 | 1.136E-08 | 7.031E-09 | 3.653E-09 | 1.354E-09 | 7.097E-10 | 4.361E-10 | 2.958E-10 | 2.143E-10 | 1.627E-10 | 1.292E-10 |

## Table 2.7-107 Annual Average D/Q Values for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 2 of 3)

**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Distances in Miles | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **5** | **7.5** | **10** | **15** | **20** | **25** | **30** | **35** | **40** | **45** | **50** |
| N | 1.086E-10 | 5.232E-11 | 3.223E-11 | 1.741E-11 | 2.664E-11 | 2.025E-11 | 1.314E-11 | 9.403E-12 | 7.323E-12 | 5.855E-12 | 4.783E-12 |
| NNE | 2.194E-10 | 1.037E-10 | 6.323E-11 | 3.323E-11 | 2.124E-11 | 1.531E-11 | 1.184E-11 | 9.588E-12 | 7.997E-12 | 6.846E-12 | 5.991E-12 |
| NE | 1.690E-10 | 7.830E-11 | 4.806E-11 | 2.525E-11 | 1.598E-11 | 1.153E-11 | 9.038E-12 | 7.483E-12 | 6.416E-12 | 5.628E-12 | 5.068E-12 |
| ENE | 1.041E-10 | 4.895E-11 | 3.029E-11 | 1.621E-11 | 1.040E-11 | 7.738E-12 | 6.287E-12 | 5.387E-12 | 4.752E-12 | 4.262E-12 | 3.922E-12 |
| E | 9.359E-11 | 4.431E-11 | 2.751E-11 | 1.482E-11 | 9.493E-12 | 7.090E-12 | 5.515E-12 | 4.418E-12 | 3.620E-12 | 3.018E-12 | 2.554E-12 |
| ESE | 1.031E-10 | 4.880E-11 | 3.031E-11 | 1.633E-11 | 1.047E-11 | 7.835E-12 | 6.117E-12 | 4.929E-12 | 4.067E-12 | 3.416E-12 | 3.104E-12 |
| SE | 8.528E-11 | 4.047E-11 | 2.515E-11 | 1.360E-11 | 8.742E-12 | 6.551E-12 | 5.220E-12 | 4.369E-12 | 3.836E-12 | 3.472E-12 | 3.186E-12 |
| SSE | 7.899E-11 | 3.719E-11 | 2.302E-11 | 1.238E-11 | 8.078E-12 | 5.937E-12 | 7.790E-12 | 1.267E-11 | 1.174E-11 | 9.306E-12 | 7.244E-12 |
| S | 6.367E-11 | 2.958E-11 | 1.822E-11 | 9.658E-12 | 6.160E-12 | 4.495E-12 | 3.559E-12 | 2.976E-12 | 3.582E-12 | 3.866E-12 | 5.308E-12 |
| SSW | 5.320E-11 | 2.473E-11 | 1.522E-11 | 8.024E-12 | 5.105E-12 | 3.722E-12 | 2.944E-12 | 2.467E-12 | 2.148E-12 | 2.029E-12 | 2.158E-12 |
| SW | 1.225E-10 | 5.866E-11 | 3.567E-11 | 1.871E-11 | 1.177E-11 | 8.328E-12 | 6.301E-12 | 4.985E-12 | 4.081E-12 | 3.432E-12 | 2.980E-12 |
| WSW | 1.206E-10 | 5.709E-11 | 3.432E-11 | 1.783E-11 | 1.131E-11 | 8.048E-12 | 7.466E-12 | 7.044E-12 | 5.680E-12 | 4.603E-12 | 3.747E-12 |
| W | 1.313E-10 | 6.159E-11 | 3.735E-11 | 2.432E-11 | 1.986E-11 | 1.381E-11 | 9.800E-12 | 7.404E-12 | 5.763E-12 | 4.604E-12 | 3.758E-12 |
| WNW | 1.430E-10 | 6.886E-11 | 4.172E-11 | 3.502E-11 | 2.473E-11 | 1.628E-11 | 1.173E-11 | 8.833E-12 | 6.872E-12 | 5.490E-12 | 4.482E-12 |
| NW | 1.323E-10 | 6.351E-11 | 3.934E-11 | 2.124E-11 | 2.325E-11 | 1.739E-11 | 1.235E-11 | 8.593E-12 | 6.668E-12 | 5.329E-12 | 4.354E-12 |
| NNW | 1.044E-10 | 4.982E-11 | 3.078E-11 | 2.296E-11 | 2.358E-11 | 1.464E-11 | 1.021E-11 | 7.713E-12 | 6.001E-12 | 4.793E-12 | 3.913E-12 |

## Table 2.7-107 Annual Average D/Q Values for Mixed-Mode Release from the Turbine Building Stack (Based on 2001-2007 met data) (Sheet 3 of 3)

**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Segment Boundaries in Miles | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 6.359E-09 | 1.588E-09 | 4.718E-10 | 2.293E-10 | 1.359E-10 | 5.591E-11 | 2.481E-11 | 1.911E-11 | 9.679E-12 | 5.893E-12 |
| NNE | 1.270E-08 | 3.140E-09 | 9.381E-10 | 4.601E-10 | 2.751E-10 | 1.114E-10 | 3.457E-11 | 1.550E-11 | 9.624E-12 | 6.870E-12 |
| NE | 1.290E-08 | 2.867E-09 | 7.862E-10 | 3.667E-10 | 2.129E-10 | 8.502E-11 | 2.620E-11 | 1.172E-11 | 7.521E-12 | 5.654E-12 |
| ENE | 7.437E-09 | 1.706E-09 | 4.715E-10 | 2.224E-10 | 1.304E-10 | 5.291E-11 | 1.676E-11 | 7.868E-12 | 5.402E-12 | 4.281E-12 |
| E | 6.473E-09 | 1.508E-09 | 4.188E-10 | 1.986E-10 | 1.170E-10 | 4.779E-11 | 1.527E-11 | 7.101E-12 | 4.428E-12 | 3.024E-12 |
| ESE | 7.167E-09 | 1.667E-09 | 4.617E-10 | 2.188E-10 | 1.289E-10 | 5.264E-11 | 1.683E-11 | 7.851E-12 | 4.940E-12 | 3.494E-12 |
| SE | 5.963E-09 | 1.385E-09 | 3.820E-10 | 1.808E-10 | 1.066E-10 | 4.362E-11 | 1.401E-11 | 6.603E-12 | 4.409E-12 | 3.474E-12 |
| SSE | 5.653E-09 | 1.296E-09 | 3.578E-10 | 1.687E-10 | 9.898E-11 | 4.018E-11 | 1.283E-11 | 7.249E-12 | 1.092E-11 | 9.262E-12 |
| S | 4.733E-09 | 1.064E-09 | 2.934E-10 | 1.375E-10 | 8.009E-11 | 3.211E-11 | 1.000E-11 | 4.564E-12 | 3.373E-12 | 4.316E-12 |
| SSW | 3.969E-09 | 8.896E-10 | 2.457E-10 | 1.150E-10 | 6.696E-11 | 2.683E-11 | 8.325E-12 | 3.780E-12 | 2.482E-12 | 2.112E-12 |
| SW | 5.198E-09 | 1.517E-09 | 5.065E-10 | 2.558E-10 | 1.532E-10 | 6.263E-11 | 1.939E-11 | 8.435E-12 | 5.017E-12 | 3.457E-12 |
| WSW | 5.899E-09 | 1.596E-09 | 5.009E-10 | 2.470E-10 | 1.495E-10 | 6.109E-11 | 1.860E-11 | 8.684E-12 | 6.645E-12 | 4.605E-12 |
| W | 7.679E-09 | 1.977E-09 | 5.859E-10 | 2.805E-10 | 1.648E-10 | 6.631E-11 | 2.523E-11 | 1.382E-11 | 7.464E-12 | 4.634E-12 |
| WNW | 8.539E-09 | 2.144E-09 | 6.287E-10 | 3.026E-10 | 1.789E-10 | 7.327E-11 | 3.193E-11 | 1.671E-11 | 8.913E-12 | 5.526E-12 |
| NW | 8.045E-09 | 2.005E-09 | 5.783E-10 | 2.785E-10 | 1.651E-10 | 6.805E-11 | 2.616E-11 | 1.694E-11 | 8.933E-12 | 5.365E-12 |
| NNW | 6.492E-09 | 1.578E-09 | 4.529E-10 | 2.179E-10 | 1.300E-10 | 5.349E-11 | 2.497E-11 | 1.525E-11 | 7.775E-12 | 4.825E-12 |

## Table 2.7-108 Nearest Residence χ/Q and D/Q Factors for Ground-Level Release (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 2.8E-06 | 2.8E-06 | 2.4E-06 | 1.2E-08 |
| NE | 3.0E-06 | 2.9E-06 | 2.5E-06 | 1.1E-08 |
| SSE | 6.1E-06 | 6.1E-06 | 5.4E-06 | 1.8E-08 |
| SSW | 3.5E-06 | 3.5E-06 | 3.1E-06 | 1.3E-08 |
| SW | 2.0E-06 | 2.0E-06 | 1.8E-06 | 1.1E-08 |
| WSW | 1.0E-06 | 1.0E-06 | 8.8E-07 | 7.3E-09 |
| W | 1.7E-06 | 1.7E-06 | 1.5E-06 | 1.2E-08 |
| NW | 5.3E-06 | 5.3E-06 | 4.8E-06 | 3.1E-08 |
| NNW | 1.5E-06 | 1.5E-06 | 1.3E-06 | 7.0E-09 |

# Table 2.7-109 Nearest Residence Χ/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted Χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted Χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted Χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 3.3E-07 | 3.3E-07 | 3.0E-07 | 4.8E-09 |
| NE | 3.0E-07 | 3.0E-07 | 2.8E-07 | 5.0E-09 |
| SSE | 2.7E-07 | 2.7E-07 | 2.5E-07 | 5.9E-09 |
| SSW | 2.2E-07 | 2.2E-07 | 2.0E-07 | 4.1E-09 |
| SW | 2.4E-07 | 2.4E-07 | 2.3E-07 | 4.7E-09 |
| WSW | 1.8E-07 | 1.8E-07 | 1.7E-07 | 3.7E-09 |
| W | 2.7E-07 | 2.7E-07 | 2.5E-07 | 6.0E-09 |
| NW | 4.7E-07 | 4.7E-07 | 4.4E-07 | 1.2E-08 |
| NNW | 1.6E-07 | 1.6E-07 | 1.5E-07 | 2.9E-09 |

## Table 2.7-110 Nearest Residence X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 3.1E-07 | 3.1E-07 | 2.8E-07 | 4.5E-09 |
| NE | 2.6E-07 | 2.6E-07 | 2.4E-07 | 4.2E-09 |
| SSE | 2.7E-07 | 2.7E-07 | 2.5E-07 | 5.3E-09 |
| SSW | 2.2E-07 | 2.2E-07 | 2.0E-07 | 3.7E-09 |
| SW | 2.1E-07 | 2.1E-07 | 1.9E-07 | 4.0E-09 |
| WSW | 1.5E-07 | 1.5E-07 | 1.4E-07 | 3.2E-09 |
| W | 2.5E-07 | 2.5E-07 | 2.3E-07 | 5.9E-09 |
| NW | 5.1E-07 | 5.1E-07 | 4.7E-07 | 1.2E-08 |
| NNW | 1.6E-07 | 1.6E-07 | 1.4E-07 | 2.9E-09 |

## Table 2.7-111 Nearest Garden Χ/Q and D/Q Factors for Ground-Level Release (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted Χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted Χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted Χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| N | 4.4E-07 | 4.3E-07 | 3.6E-07 | 1.5E-09 |
| NNE | 8.4E-07 | 8.4E-07 | 6.9E-07 | 3.2E-09 |
| NE | 8.9E-07 | 8.8E-07 | 7.3E-07 | 3.1E-09 |
| S | 1.8E-06 | 1.8E-06 | 1.5E-06 | 5.7E-09 |
| WSW | 2.0E-07 | 2.0E-07 | 1.7E-07 | 1.3E-09 |
| W | 5.4E-07 | 5.4E-07 | 4.6E-07 | 3.7E-09 |
| NW | 5.3E-06 | 5.3E-06 | 4.8E-06 | 3.1E-08 |
| NNW | 2.0E-06 | 2.0E-06 | 1.7E-06 | 9.0E-09 |

### Table 2.7-112 Nearest Garden Χ/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted Χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted Χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted Χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| N | 7.4E-08 | 7.3E-08 | 6.8E-08 | 6.0E-10 |
| NNE | 1.4E-07 | 1.4E-07 | 1.3E-07 | 1.4E-09 |
| NE | 1.4E-07 | 1.4E-07 | 1.3E-07 | 1.6E-09 |
| S | 1.4E-07 | 1.4E-07 | 1.3E-07 | 2.1E-09 |
| WSW | 6.0E-08 | 6.0E-08 | 5.5E-08 | 8.1E-10 |
| W | 1.2E-07 | 1.2E-07 | 1.1E-07 | 2.1E-09 |
| NW | 4.7E-07 | 4.7E-07 | 4.4E-07 | 1.2E-08 |
| NNW | 1.9E-07 | 1.9E-07 | 1.8E-07 | 3.7E-09 |

**Table 2.7-113 Nearest Garden χ/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)**

| Sector | No Decay, Undepleted χ/Q ($sec/m^3$) | 2.26 Day Decay, Undepleted χ/Q ($sec/m^3$) | 8.0 Day Decay, Depleted χ/Q ($sec/m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| N | 6.2E-08 | 6.2E-08 | 5.6E-08 | 5.9E-10 |
| NNE | 1.3E-07 | 1.3E-07 | 1.1E-07 | 1.4E-09 |
| NE | 1.2E-07 | 1.2E-07 | 1.1E-07 | 1.4E-09 |
| S | 1.4E-07 | 1.3E-07 | 1.2E-07 | 1.9E-09 |
| WSW | 5.1E-08 | 5.1E-08 | 4.6E-08 | 7.3E-10 |
| W | 1.1E-07 | 1.1E-07 | 9.8E-08 | 2.0E-09 |
| NW | 5.0E-07 | 5.0E-07 | 4.7E-07 | 1.1E-08 |
| NNW | 1.9E-07 | 1.9E-07 | 1.7E-07 | 3.7E-09 |

## Table 2.7-114 Nearest Sheep χ/Q and D/Q Factors for Ground Level Release (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 1.9E-07 | 1.8E-07 | 1.4E-07 | 5.7E-10 |
| NNW | 8.1E-08 | 8.0E-08 | 6.1E-08 | 2.6E-10 |

## Table 2.7-115 Nearest Sheep X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 4.8E-08 | 4.7E-08 | 4.3E-08 | 2.8E-10 |
| NNW | 2.0E-08 | 2.0E-08 | 1.8E-08 | 1.4E-10 |

## Table 2.7-116 Nearest Sheep X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q ($sec/m^3$) | 2.26 Day Decay, Undepleted X/Q ($sec/m^3$) | 8.0 Day Decay, Depleted X/Q ($sec/m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| NNE | 4.1E-08 | 4.0E-08 | 3.6E-08 | 2.8E-10 |
| NNW | 1.7E-08 | 1.7E-08 | 1.5E-08 | 1.4E-10 |

**Table 2.7-117 Nearest Meat Cow $\chi$/Q and D/Q Factors for Ground Level Release (Based on 2002-2007 met data)**

| Sector | No Decay, Undepleted $\chi$/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted $\chi$/Q (sec/m$^3$) | 8.0 Day Decay, Depleted $\chi$/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 1.9E-07 | 1.8E-07 | 1.4E-07 | 5.7E-10 |
| NNW | 1.7E-07 | 1.7E-07 | 1.4E-07 | 6.4E-10 |

## Table 2.7-118 Nearest Meat Cow X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 2002-2007 met data)

| Sector | No Decay, Undepleted X/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted X/Q (sec/$m^3$) | 8.0 Day Decay, Depleted X/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| NNE | 4.8E-08 | 4.7E-08 | 4.3E-08 | 2.8E-10 |
| NNW | 3.6E-08 | 3.6E-08 | 3.3E-08 | 3.1E-10 |

**Table 2.7-119 Nearest Meat Cow X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 2002-2007 met data)**

| Sector | No Decay, Undepleted X/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted X/Q (sec/$m^3$) | 8.0 Day Decay, Depleted X/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| NNE | 4.1E-08 | 4.0E-08 | 3.6E-08 | 2.8E-10 |
| NNW | 3.1E-08 | 3.1E-08 | 2.7E-08 | 3.1E-10 |

# Table 2.7-120 Site Boundary X/Q and D/Q Factors for Ground-Level Release (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **N** | 9.50E-06 | 9.50E-06 | 8.60E-06 | 4.00E-08 |
| **NNE** | 6.10E-06 | 6.00E-06 | 5.40E-06 | 2.70E-08 |
| **NE** | 2.60E-06 | 2.60E-06 | 2.20E-06 | 1.20E-08 |
| **SSE** | 1.10E-05 | 1.10E-05 | 9.90E-06 | 3.50E-08 |
| **S** | 7.20E-06 | 7.20E-06 | 6.50E-06 | 2.40E-08 |
| **SSW** | 4.00E-06 | 4.00E-06 | 3.60E-06 | 1.70E-08 |
| **SW** | 2.40E-06 | 2.30E-06 | 2.10E-06 | 1.80E-08 |
| **WSW** | 2.40E-06 | 2.40E-06 | 2.10E-06 | 1.60E-08 |
| **W** | 5.50E-06 | 5.50E-06 | 5.00E-06 | 3.20E-08 |
| **WNW** | 8.90E-06 | 8.90E-06 | 8.10E-06 | 4.40E-08 |
| **NW** | 1.00E-05 | 1.00E-05 | 9.50E-06 | 4.90E-08 |
| **NNW** | 9.60E-06 | 9.60E-06 | 8.80E-06 | 4.00E-08 |

## Table 2.7-121 Site Boundary X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **N** | 7.20E-07 | 7.20E-07 | 6.60E-07 | 1.10E-08 |
| **NNE** | 6.70E-07 | 6.70E-07 | 6.10E-07 | 9.80E-09 |
| **NE** | 3.50E-07 | 3.50E-07 | 3.20E-07 | 5.40E-09 |
| **SSE** | 5.20E-07 | 5.20E-07 | 4.80E-07 | 1.00E-08 |
| **S** | 4.20E-07 | 4.20E-07 | 3.80E-07 | 7.00E-09 |
| **SSW** | 2.80E-07 | 2.80E-07 | 2.60E-07 | 5.60E-09 |
| **SW** | 3.80E-07 | 3.80E-07 | 3.60E-07 | 8.40E-09 |
| **WSW** | 3.30E-07 | 3.30E-07 | 3.00E-07 | 6.90E-09 |
| **W** | 5.60E-07 | 5.60E-07 | 5.20E-07 | 1.20E-08 |
| **WNW** | 7.80E-07 | 7.80E-07 | 7.30E-07 | 1.50E-08 |
| **NW** | 8.70E-07 | 8.70E-07 | 8.10E-07 | 1.50E-08 |
| **NNW** | 7.10E-07 | 7.10E-07 | 6.60E-07 | 1.00E-08 |

## Table 2.7-122 Site Boundary X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted X/Q (sec/$m^3$) | 8.0 Day Decay, Depleted X/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| **N** | 8.10E-07 | 8.10E-07 | 7.40E-07 | 9.90E-09 |
| **NNE** | 7.20E-07 | 7.10E-07 | 6.40E-07 | 9.20E-09 |
| **NE** | 3.30E-07 | 3.30E-07 | 3.00E-07 | 4.70E-09 |
| **SSE** | 5.80E-07 | 5.80E-07 | 5.30E-07 | 8.50E-09 |
| **S** | 4.80E-07 | 4.80E-07 | 4.40E-07 | 6.00E-09 |
| **SSW** | 2.90E-07 | 2.90E-07 | 2.60E-07 | 4.70E-09 |
| **SW** | 3.40E-07 | 3.40E-07 | 3.10E-07 | 7.50E-09 |
| **WSW** | 3.10E-07 | 3.10E-07 | 2.80E-07 | 5.90E-09 |
| **W** | 6.20E-07 | 6.20E-07 | 5.70E-07 | 1.10E-08 |
| **WNW** | 8.60E-07 | 8.60E-07 | 8.00E-07 | 1.40E-08 |
| **NW** | 9.60E-07 | 9.60E-07 | 8.90E-07 | 1.40E-08 |
| **NNW** | 8.30E-07 | 8.30E-07 | 7.60E-07 | 9.40E-09 |

**Table 2.7-123 Nearest Residence X/Q and D/Q Factors for Ground-Level Release (Based on 1985-1989 met data)**

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **NNE** | 2.50E-06 | 2.50E-06 | 2.20E-06 | 1.10E-08 |
| **NE** | 2.20E-06 | 2.20E-06 | 1.90E-06 | 1.00E-08 |
| **SSE** | 6.00E-06 | 5.90E-06 | 5.30E-06 | 1.90E-08 |
| **SSW** | 2.40E-06 | 2.40E-06 | 2.20E-06 | 1.10E-08 |
| **SW** | 1.70E-06 | 1.70E-06 | 1.50E-06 | 1.30E-08 |
| **WSW** | 9.10E-07 | 9.10E-07 | 8.00E-07 | 6.10E-09 |
| **W** | 1.70E-06 | 1.70E-06 | 1.50E-06 | 1.10E-08 |
| **NW** | 7.00E-06 | 7.00E-06 | 6.30E-06 | 3.40E-08 |
| **NNW** | 1.60E-06 | 1.60E-06 | 1.40E-06 | 7.00E-09 |

**Table 2.7-124 Nearest Residence X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)**

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **NNE** | 3.60E-07 | 3.60E-07 | 3.30E-07 | 4.50E-09 |
| **NE** | 3.20E-07 | 3.20E-07 | 2.90E-07 | 4.60E-09 |
| **SSE** | 3.60E-07 | 3.60E-07 | 3.30E-07 | 6.50E-09 |
| **SSW** | 2.10E-07 | 2.10E-07 | 2.00E-07 | 3.90E-09 |
| **SW** | 3.20E-07 | 3.20E-07 | 3.00E-07 | 6.60E-09 |
| **WSW** | 1.80E-07 | 1.80E-07 | 1.70E-07 | 3.20E-09 |
| **W** | 2.80E-07 | 2.80E-07 | 2.60E-07 | 4.90E-09 |
| **NW** | 6.80E-07 | 6.80E-07 | 6.30E-07 | 1.20E-08 |
| **NNW** | 2.40E-07 | 2.40E-07 | 2.20E-07 | 2.80E-09 |

## Table 2.7-125 Nearest Residence X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **NNE** | 3.60E-07 | 3.60E-07 | 3.20E-07 | 4.10E-09 |
| **NE** | 2.90E-07 | 2.90E-07 | 2.60E-07 | 4.10E-09 |
| **SSE** | 3.70E-07 | 3.70E-07 | 3.40E-07 | 5.60E-09 |
| **SSW** | 2.00E-07 | 2.00E-07 | 1.90E-07 | 3.40E-09 |
| **SW** | 2.80E-07 | 2.80E-07 | 2.50E-07 | 5.90E-09 |
| **WSW** | 1.60E-07 | 1.60E-07 | 1.40E-07 | 2.80E-09 |
| **W** | 2.70E-07 | 2.70E-07 | 2.40E-07 | 4.90E-09 |
| **NW** | 7.20E-07 | 7.20E-07 | 6.60E-07 | 1.10E-08 |
| **NNW** | 2.20E-07 | 2.20E-07 | 2.00E-07 | 2.50E-09 |

## Table 2.7-126 Nearest Garden χ/Q and D/Q Factors for Ground-Level Release (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **N** | 4.30E-07 | 4.30E-07 | 3.50E-07 | 1.70E-09 |
| **NNE** | 7.50E-07 | 7.40E-07 | 6.20E-07 | 3.00E-09 |
| **NE** | 6.60E-07 | 6.50E-07 | 5.40E-07 | 2.80E-09 |
| **S** | 1.50E-06 | 1.50E-06 | 1.30E-06 | 5.30E-09 |
| **WSW** | 1.80E-07 | 1.80E-07 | 1.50E-07 | 1.10E-09 |
| **W** | 5.40E-07 | 5.30E-07 | 4.60E-07 | 3.20E-09 |
| **NW** | 7.00E-06 | 7.00E-06 | 6.30E-06 | 3.40E-08 |
| **NNW** | 2.10E-06 | 2.10E-06 | 1.80E-06 | 9.00E-09 |

## Table 2.7-127 Nearest Garden Χ/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted Χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted Χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted Χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| N | 9.80E-08 | 9.80E-08 | 9.00E-08 | 7.50E-10 |
| NNE | 1.50E-07 | 1.50E-07 | 1.40E-07 | 1.40E-09 |
| NE | 1.40E-07 | 1.40E-07 | 1.30E-07 | 1.40E-09 |
| S | 1.50E-07 | 1.50E-07 | 1.40E-07 | 2.00E-09 |
| WSW | 5.60E-08 | 5.60E-08 | 5.10E-08 | 7.20E-10 |
| W | 1.30E-07 | 1.20E-07 | 1.20E-07 | 1.80E-09 |
| NW | 6.80E-07 | 6.80E-07 | 6.30E-07 | 1.20E-08 |
| NNW | 2.80E-07 | 2.80E-07 | 2.60E-07 | 3.50E-09 |

## Table 2.7-128 Nearest Garden $\chi$/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted $\chi$/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted $\chi$/Q (sec/m$^3$) | 8.0 Day Decay, Depleted $\chi$/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **N** | 8.60E-08 | 8.60E-08 | 7.70E-08 | 7.20E-10 |
| **NNE** | 1.40E-07 | 1.40E-07 | 1.20E-07 | 1.30E-09 |
| **NE** | 1.20E-07 | 1.20E-07 | 1.10E-07 | 1.30E-09 |
| **S** | 1.50E-07 | 1.50E-07 | 1.30E-07 | 1.70E-09 |
| **WSW** | 4.90E-08 | 4.90E-08 | 4.40E-08 | 6.50E-10 |
| **W** | 1.10E-07 | 1.10E-07 | 1.00E-07 | 1.70E-09 |
| **NW** | 7.10E-07 | 7.10E-07 | 6.50E-07 | 1.10E-08 |
| **NNW** | 2.70E-07 | 2.60E-07 | 2.40E-07 | 3.10E-09 |

## Table 2.7-129 Nearest Sheep $\chi$/Q and D/Q Factors for Ground Level Release (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted $\chi$/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted $\chi$/Q (sec/m$^3$) | 8.0 Day Decay, Depleted $\chi$/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| **NNE** | 1.60E-07 | 1.60E-07 | 1.20E-07 | 5.30E-10 |
| **NNW** | 8.40E-08 | 8.20E-08 | 6.30E-08 | 2.70E-10 |

**Table 2.7-130 Nearest Sheep Χ/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)**

| Sector | No Decay, Undepleted Χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted Χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted Χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 4.80E-08 | 4.80E-08 | 4.30E-08 | 2.70E-10 |
| NNW | 2.60E-08 | 2.50E-08 | 2.30E-08 | 1.50E-10 |

## Table 2.7-131 Nearest Sheep Χ/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted Χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted Χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted Χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 4.30E-08 | 4.30E-08 | 3.80E-08 | 2.70E-10 |
| NNW | 2.30E-08 | 2.30E-08 | 2.00E-08 | 1.50E-10 |

## Table 2.7-132 Nearest Goat X/Q and D/Q Factors for Ground Level Release (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 3.00E-07 | 3.00E-07 | 2.40E-07 | 1.40E-09 |
| NNW | 1.70E-07 | 1.70E-07 | 1.40E-07 | 6.20E-10 |

## Table 2.7-133 Nearest Goat X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted X/Q (sec/$m^3$) | 8.0 Day Decay, Depleted X/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| WNW | 7.70E-08 | 7.70E-08 | 7.00E-08 | 8.10E-10 |
| NNW | 4.70E-08 | 4.60E-08 | 4.20E-08 | 3.30E-10 |

## Table 2.7-134 Nearest Goat X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 6.90E-08 | 6.90E-08 | 6.10E-08 | 7.70E-10 |
| NNW | 4.20E-08 | 4.20E-08 | 3.70E-08 | 3.20E-10 |

## Table 2.7-135 Nearest Meat Cow X/Q and D/Q Factors for Ground Level Release (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/$m^3$) | 2.26 Day Decay, Undepleted X/Q (sec/$m^3$) | 8.0 Day Decay, Depleted X/Q (sec/$m^3$) | D/Q ($m^{-2}$) |
|---|---|---|---|---|
| NNE | 1.60E-07 | 1.60E-07 | 1.20E-07 | 5.30E-10 |
| NNW | 1.80E-07 | 1.80E-07 | 1.40E-07 | 6.40E-10 |

**Table 2.7-136 Nearest Meat Cow X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)**

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 4.80E-08 | 4.80E-08 | 4.30E-08 | 2.70E-10 |
| NNW | 4.80E-08 | 4.70E-08 | 4.30E-08 | 3.40E-10 |

## Table 2.7-137 Nearest Meat Cow χ/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| NNE | 4.30E-08 | 4.30E-08 | 3.80E-08 | 2.70E-10 |
| NNW | 4.30E-08 | 4.20E-08 | 3.80E-08 | 3.30E-10 |

**Table 2.7-138 Nearest Milk Cow χ/Q and D/Q Factors for Ground Level Release (Based on 1985-1989 met data)**

| Sector | No Decay, Undepleted χ/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted χ/Q (sec/m$^3$) | 8.0 Day Decay, Depleted χ/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 3.40E-07 | 3.30E-07 | 2.80E-07 | 1.60E-09 |
| NW | 1.30E-07 | 1.30E-07 | 1.00E-07 | 5.20E-10 |

**Table 2.7-139 Nearest Milk Cow X/Q and D/Q Factors for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data)**

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 8.40E-08 | 8.40E-08 | 7.70E-08 | 9.10E-10 |
| NW | 3.90E-08 | 3.90E-08 | 3.50E-08 | 3.20E-10 |

## Table 2.7-140 Nearest Milk Cow X/Q and D/Q Factors for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data)

| Sector | No Decay, Undepleted X/Q (sec/m$^3$) | 2.26 Day Decay, Undepleted X/Q (sec/m$^3$) | 8.0 Day Decay, Depleted X/Q (sec/m$^3$) | D/Q (m$^{-2}$) |
|---|---|---|---|---|
| WNW | 7.60E-08 | 7.50E-08 | 6.80E-08 | 8.70E-10 |
| NW | 3.50E-08 | 3.50E-08 | 3.10E-08 | 3.10E-10 |

## Table 2.7-141 Annual Average X/Q Values (no Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 1 of 3)

| Annual Average X/Q ($sec/m^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 4.021E-05 | 1.175E-05 | 5.764E-06 | 2.745E-06 | 1.028E-06 | 5.364E-07 | 3.321E-07 | 2.280E-07 | 1.677E-07 | 1.295E-07 | 1.037E-07 |
| NNE | 6.006E-05 | 1.753E-05 | 8.587E-06 | 4.091E-06 | 1.535E-06 | 8.031E-07 | 4.984E-07 | 3.429E-07 | 2.527E-07 | 1.954E-07 | 1.568E-07 |
| NE | 8.615E-05 | 2.517E-05 | 1.225E-05 | 5.855E-06 | 2.217E-06 | 1.171E-06 | 7.330E-07 | 5.081E-07 | 3.768E-07 | 2.932E-07 | 2.365E-07 |
| ENE | 9.240E-05 | 2.698E-05 | 1.312E-05 | 6.270E-06 | 2.378E-06 | 1.257E-06 | 7.879E-07 | 5.466E-07 | 4.058E-07 | 3.160E-07 | 2.550E-07 |
| E | 9.619E-05 | 2.802E-05 | 1.359E-05 | 6.498E-06 | 2.467E-06 | 1.306E-06 | 8.192E-07 | 5.689E-07 | 4.227E-07 | 3.294E-07 | 2.660E-07 |
| ESE | 9.470E-05 | 2.751E-05 | 1.330E-05 | 6.365E-06 | 2.420E-06 | 1.284E-06 | 8.065E-07 | 5.609E-07 | 4.172E-07 | 3.255E-07 | 2.631E-07 |
| SE | 7.865E-05 | 2.288E-05 | 1.108E-05 | 5.299E-06 | 2.014E-06 | 1.067E-06 | 6.699E-07 | 4.656E-07 | 3.462E-07 | 2.699E-07 | 2.181E-07 |
| SSE | 7.415E-05 | 2.158E-05 | 1.044E-05 | 4.999E-06 | 1.902E-06 | 1.009E-06 | 6.339E-07 | 4.409E-07 | 3.280E-07 | 2.559E-07 | 2.069E-07 |
| S | 5.040E-05 | 1.469E-05 | 7.117E-06 | 3.407E-06 | 1.297E-06 | 6.879E-07 | 4.322E-07 | 3.006E-07 | 2.236E-07 | 1.745E-07 | 1.410E-07 |
| SSW | 2.980E-05 | 8.719E-06 | 4.249E-06 | 2.030E-06 | 7.686E-07 | 4.059E-07 | 2.540E-07 | 1.760E-07 | 1.305E-07 | 1.016E-07 | 8.188E-08 |
| SW | 2.008E-05 | 5.786E-06 | 2.832E-06 | 1.344E-06 | 4.978E-07 | 2.570E-07 | 1.576E-07 | 1.073E-07 | 7.830E-08 | 6.005E-08 | 4.779E-08 |
| WSW | 1.497E-05 | 4.322E-06 | 2.112E-06 | 1.003E-06 | 3.728E-07 | 1.932E-07 | 1.188E-07 | 8.113E-08 | 5.936E-08 | 4.564E-08 | 3.640E-08 |
| W | 1.858E-05 | 5.364E-06 | 2.619E-06 | 1.245E-06 | 4.642E-07 | 2.415E-07 | 1.491E-07 | 1.021E-07 | 7.493E-08 | 5.776E-08 | 4.618E-08 |
| WNW | 2.835E-05 | 8.196E-06 | 3.995E-06 | 1.901E-06 | 7.111E-07 | 3.711E-07 | 2.298E-07 | 1.578E-07 | 1.161E-07 | 8.969E-08 | 7.186E-08 |
| NW | 3.307E-05 | 9.562E-06 | 4.656E-06 | 2.216E-06 | 8.295E-07 | 4.331E-07 | 2.684E-07 | 1.844E-07 | 1.357E-07 | 1.049E-07 | 8.405E-08 |
| NNW | 3.047E-05 | 8.888E-06 | 4.350E-06 | 2.074E-06 | 7.779E-07 | 4.067E-07 | 2.522E-07 | 1.734E-07 | 1.276E-07 | 9.867E-08 | 7.909E-08 |

## Table 2.7-141 Annual Average X/Q Values (no Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 2 of 3)

| Annual Average X/Q ($sec/m^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 8.544E-08 | 4.325E-08 | 2.779E-08 | 1.579E-08 | 1.064E-08 | 7.853E-09 | 6.137E-09 | 4.987E-09 | 4.170E-09 | 3.563E-09 | 3.097E-09 |
| NNE | 1.293E-07 | 6.584E-08 | 4.248E-08 | 2.429E-08 | 1.644E-08 | 1.218E-08 | 9.542E-09 | 7.773E-09 | 6.513E-09 | 5.576E-09 | 4.854E-09 |
| NE | 1.960E-07 | 1.017E-07 | 6.658E-08 | 3.882E-08 | 2.663E-08 | 1.993E-08 | 1.575E-08 | 1.292E-08 | 1.089E-08 | 9.375E-09 | 8.200E-09 |
| ENE | 2.115E-07 | 1.100E-07 | 7.212E-08 | 4.216E-08 | 2.897E-08 | 2.171E-08 | 1.718E-08 | 1.411E-08 | 1.190E-08 | 1.025E-08 | 8.973E-09 |
| E | 2.208E-07 | 1.152E-07 | 7.566E-08 | 4.437E-08 | 3.056E-08 | 2.295E-08 | 1.818E-08 | 1.495E-08 | 1.263E-08 | 1.089E-08 | 9.542E-09 |
| ESE | 2.186E-07 | 1.145E-07 | 7.544E-08 | 4.443E-08 | 3.070E-08 | 2.311E-08 | 1.835E-08 | 1.512E-08 | 1.279E-08 | 1.104E-08 | 9.686E-09 |
| SE | 1.811E-07 | 9.470E-08 | 6.231E-08 | 3.663E-08 | 2.527E-08 | 1.900E-08 | 1.507E-08 | 1.241E-08 | 1.049E-08 | 9.051E-09 | 7.935E-09 |
| SSE | 1.719E-07 | 8.999E-08 | 5.928E-08 | 3.489E-08 | 2.410E-08 | 1.813E-08 | 1.439E-08 | 1.185E-08 | 1.003E-08 | 8.655E-09 | 7.591E-09 |
| S | 1.172E-07 | 6.129E-08 | 4.035E-08 | 2.373E-08 | 1.637E-08 | 1.231E-08 | 9.763E-09 | 8.036E-09 | 6.794E-09 | 5.862E-09 | 5.139E-09 |
| SSW | 6.787E-08 | 3.520E-08 | 2.302E-08 | 1.341E-08 | 9.193E-09 | 6.877E-09 | 5.433E-09 | 4.455E-09 | 3.755E-09 | 3.231E-09 | 2.825E-09 |
| SW | 3.915E-08 | 1.941E-08 | 1.228E-08 | 6.823E-09 | 4.531E-09 | 3.307E-09 | 2.561E-09 | 2.065E-09 | 1.715E-09 | 1.457E-09 | 1.260E-09 |
| WSW | 2.989E-08 | 1.493E-08 | 9.506E-09 | 5.335E-09 | 3.569E-09 | 2.620E-09 | 2.039E-09 | 1.651E-09 | 1.376E-09 | 1.173E-09 | 1.017E-09 |
| W | 3.799E-08 | 1.915E-08 | 1.227E-08 | 6.948E-09 | 4.678E-09 | 3.451E-09 | 2.697E-09 | 2.191E-09 | 1.832E-09 | 1.566E-09 | 1.361E-09 |
| WNW | 5.923E-08 | 3.006E-08 | 1.937E-08 | 1.106E-08 | 7.487E-09 | 5.549E-09 | 4.351E-09 | 3.547E-09 | 2.974E-09 | 2.548E-09 | 2.220E-09 |
| NW | 6.930E-08 | 3.522E-08 | 2.271E-08 | 1.299E-08 | 8.807E-09 | 6.534E-09 | 5.128E-09 | 4.184E-09 | 3.510E-09 | 3.009E-09 | 2.622E-09 |
| NNW | 6.520E-08 | 3.310E-08 | 2.132E-08 | 1.216E-08 | 8.217E-09 | 6.079E-09 | 4.760E-09 | 3.875E-09 | 3.245E-09 | 2.777E-09 | 2.416E-09 |

## Table 2.7-141 Annual Average X/Q Values (no Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 3 of 3)

X/Q ($sec/m^3$) for Each Segment

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sector | .5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| N | 5.752E-06 | 1.191E-06 | 3.449E-07 | 1.704E-07 | 1.046E-07 | 4.575E-08 | 1.617E-08 | 7.910E-09 | 5.004E-09 | 3.570E-09 |
| NNE | 8.576E-06 | 1.778E-06 | 5.175E-07 | 2.567E-07 | 1.581E-07 | 6.957E-08 | 2.484E-08 | 1.226E-08 | 7.799E-09 | 5.586E-09 |
| NE | 1.228E-05 | 2.561E-06 | 7.599E-07 | 3.825E-07 | 2.383E-07 | 1.071E-07 | 3.957E-08 | 2.004E-08 | 1.296E-08 | 9.390E-09 |
| ENE | 1.315E-05 | 2.745E-06 | 8.166E-07 | 4.118E-07 | 2.569E-07 | 1.157E-07 | 4.295E-08 | 2.183E-08 | 1.414E-08 | 1.027E-08 |
| E | 1.364E-05 | 2.847E-06 | 8.489E-07 | 4.289E-07 | 2.680E-07 | 1.211E-07 | 4.519E-08 | 2.307E-08 | 1.499E-08 | 1.091E-08 |
| ESE | 1.338E-05 | 2.792E-06 | 8.355E-07 | 4.233E-07 | 2.651E-07 | 1.203E-07 | 4.522E-08 | 2.323E-08 | 1.515E-08 | 1.106E-08 |
| SE | 1.113E-05 | 2.323E-06 | 6.941E-07 | 3.513E-07 | 2.198E-07 | 9.951E-08 | 3.729E-08 | 1.910E-08 | 1.244E-08 | 9.064E-09 |
| SSE | 1.050E-05 | 2.193E-06 | 6.567E-07 | 3.328E-07 | 2.085E-07 | 9.454E-08 | 3.551E-08 | 1.823E-08 | 1.188E-08 | 8.668E-09 |
| S | 7.150E-06 | 1.495E-06 | 4.478E-07 | 2.269E-07 | 1.421E-07 | 6.440E-08 | 2.415E-08 | 1.237E-08 | 8.057E-09 | 5.870E-09 |
| SSW | 4.256E-06 | 8.877E-07 | 2.633E-07 | 1.325E-07 | 8.252E-08 | 3.704E-08 | 1.367E-08 | 6.917E-09 | 4.468E-09 | 3.236E-09 |
| SW | 2.827E-06 | 5.788E-07 | 1.640E-07 | 7.963E-08 | 4.823E-08 | 2.063E-08 | 7.016E-09 | 3.335E-09 | 2.073E-09 | 1.460E-09 |
| WSW | 2.110E-06 | 4.331E-07 | 1.236E-07 | 6.035E-08 | 3.673E-08 | 1.584E-08 | 5.477E-09 | 2.640E-09 | 1.657E-09 | 1.175E-09 |
| W | 2.618E-06 | 5.386E-07 | 1.549E-07 | 7.615E-08 | 4.658E-08 | 2.028E-08 | 7.121E-09 | 3.477E-09 | 2.199E-09 | 1.569E-09 |
| WNW | 3.998E-06 | 8.243E-07 | 2.387E-07 | 1.180E-07 | 7.246E-08 | 3.179E-08 | 1.132E-08 | 5.587E-09 | 3.559E-09 | 2.553E-09 |
| NW | 4.662E-06 | 9.615E-07 | 2.787E-07 | 1.379E-07 | 8.476E-08 | 3.724E-08 | 1.329E-08 | 6.578E-09 | 4.197E-09 | 3.014E-09 |
| NNW | 4.347E-06 | 9.010E-07 | 2.619E-07 | 1.297E-07 | 7.975E-08 | 3.500E-08 | 1.244E-08 | 6.122E-09 | 3.888E-09 | 2.782E-09 |

## Table 2.7-142 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 1 of 3)

**Annual Average X/Q (sec/$m^3$)**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 4.017E-05 | 1.172E-05 | 5.746E-06 | 2.734E-06 | 1.021E-06 | 5.319E-07 | 3.286E-07 | 2.252E-07 | 1.652E-07 | 1.273E-07 | 1.018E-07 |
| NNE | 6.000E-05 | 1.750E-05 | 8.564E-06 | 4.076E-06 | 1.527E-06 | 7.974E-07 | 4.940E-07 | 3.393E-07 | 2.495E-07 | 1.927E-07 | 1.543E-07 |
| NE | 8.607E-05 | 2.513E-05 | 1.222E-05 | 5.833E-06 | 2.205E-06 | 1.163E-06 | 7.263E-07 | 5.025E-07 | 3.721E-07 | 2.890E-07 | 2.326E-07 |
| ENE | 9.231E-05 | 2.692E-05 | 1.308E-05 | 6.246E-06 | 2.364E-06 | 1.248E-06 | 7.803E-07 | 5.403E-07 | 4.003E-07 | 3.111E-07 | 2.505E-07 |
| E | 9.608E-05 | 2.796E-05 | 1.354E-05 | 6.468E-06 | 2.450E-06 | 1.294E-06 | 8.097E-07 | 5.610E-07 | 4.158E-07 | 3.233E-07 | 2.605E-07 |
| ESE | 9.460E-05 | 2.745E-05 | 1.326E-05 | 6.337E-06 | 2.405E-06 | 1.272E-06 | 7.976E-07 | 5.535E-07 | 4.108E-07 | 3.198E-07 | 2.579E-07 |
| SE | 7.855E-05 | 2.282E-05 | 1.104E-05 | 5.274E-06 | 1.999E-06 | 1.057E-06 | 6.618E-07 | 4.589E-07 | 3.403E-07 | 2.647E-07 | 2.134E-07 |
| SSE | 7.407E-05 | 2.153E-05 | 1.041E-05 | 4.976E-06 | 1.889E-06 | 9.999E-07 | 6.268E-07 | 4.350E-07 | 3.229E-07 | 2.513E-07 | 2.027E-07 |
| S | 5.034E-05 | 1.465E-05 | 7.093E-06 | 3.391E-06 | 1.288E-06 | 6.817E-07 | 4.273E-07 | 2.965E-07 | 2.201E-07 | 1.713E-07 | 1.382E-07 |
| SSW | 2.977E-05 | 8.700E-06 | 4.235E-06 | 2.021E-06 | 7.636E-07 | 4.024E-07 | 2.512E-07 | 1.737E-07 | 1.285E-07 | 9.979E-08 | 8.028E-08 |
| SW | 2.006E-05 | 5.776E-06 | 2.825E-06 | 1.340E-06 | 4.953E-07 | 2.553E-07 | 1.563E-07 | 1.062E-07 | 7.738E-08 | 5.924E-08 | 4.706E-08 |
| WSW | 1.496E-05 | 4.314E-06 | 2.107E-06 | 1.000E-06 | 3.709E-07 | 1.918E-07 | 1.178E-07 | 8.029E-08 | 5.864E-08 | 4.500E-08 | 3.583E-08 |
| W | 1.856E-05 | 5.354E-06 | 2.611E-06 | 1.240E-06 | 4.616E-07 | 2.396E-07 | 1.477E-07 | 1.009E-07 | 7.393E-08 | 5.687E-08 | 4.538E-08 |
| WNW | 2.832E-05 | 8.181E-06 | 3.983E-06 | 1.893E-06 | 7.071E-07 | 3.683E-07 | 2.276E-07 | 1.560E-07 | 1.146E-07 | 8.834E-08 | 7.064E-08 |
| NW | 3.304E-05 | 9.546E-06 | 4.644E-06 | 2.209E-06 | 8.253E-07 | 4.302E-07 | 2.661E-07 | 1.825E-07 | 1.341E-07 | 1.034E-07 | 8.276E-08 |
| NNW | 3.044E-05 | 8.871E-06 | 4.337E-06 | 2.066E-06 | 7.733E-07 | 4.035E-07 | 2.497E-07 | 1.713E-07 | 1.259E-07 | 9.709E-08 | 7.767E-08 |

## Table 2.7-142 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 2 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 8.365E-08 | 4.190E-08 | 2.664E-08 | 1.483E-08 | 9.793E-09 | 7.088E-09 | 5.434E-09 | 4.334E-09 | 3.558E-09 | 2.986E-09 | 2.550E-09 |
| NNE | 1.270E-07 | 6.410E-08 | 4.100E-08 | 2.303E-08 | 1.532E-08 | 1.115E-08 | 8.596E-09 | 6.886E-09 | 5.676E-09 | 4.780E-09 | 4.095E-09 |
| NE | 1.925E-07 | 9.899E-08 | 6.420E-08 | 3.677E-08 | 2.478E-08 | 1.823E-08 | 1.416E-08 | 1.142E-08 | 9.470E-09 | 8.017E-09 | 6.899E-09 |
| ENE | 2.074E-07 | 1.068E-07 | 6.936E-08 | 3.977E-08 | 2.681E-08 | 1.971E-08 | 1.531E-08 | 1.234E-08 | 1.022E-08 | 8.646E-09 | 7.433E-09 |
| E | 2.157E-07 | 1.112E-07 | 7.223E-08 | 4.140E-08 | 2.789E-08 | 2.048E-08 | 1.589E-08 | 1.279E-08 | 1.058E-08 | 8.935E-09 | 7.671E-09 |
| ESE | 2.138E-07 | 1.108E-07 | 7.219E-08 | 4.161E-08 | 2.815E-08 | 2.075E-08 | 1.614E-08 | 1.303E-08 | 1.081E-08 | 9.147E-09 | 7.869E-09 |
| SE | 1.768E-07 | 9.130E-08 | 5.936E-08 | 3.407E-08 | 2.297E-08 | 1.688E-08 | 1.309E-08 | 1.054E-08 | 8.724E-09 | 7.369E-09 | 6.327E-09 |
| SSE | 1.680E-07 | 8.698E-08 | 5.665E-08 | 3.261E-08 | 2.202E-08 | 1.621E-08 | 1.260E-08 | 1.016E-08 | 8.411E-09 | 7.111E-09 | 6.109E-09 |
| S | 1.145E-07 | 5.923E-08 | 3.855E-08 | 2.217E-08 | 1.497E-08 | 1.101E-08 | 8.557E-09 | 6.900E-09 | 5.717E-09 | 4.836E-09 | 4.158E-09 |
| SSW | 6.639E-08 | 3.405E-08 | 2.203E-08 | 1.256E-08 | 8.423E-09 | 6.168E-09 | 4.772E-09 | 3.834E-09 | 3.166E-09 | 2.670E-09 | 2.290E-09 |
| SW | 3.849E-08 | 1.890E-08 | 1.185E-08 | 6.471E-09 | 4.223E-09 | 3.029E-09 | 2.306E-09 | 1.829E-09 | 1.494E-09 | 1.249E-09 | 1.063E-09 |
| WSW | 2.936E-08 | 1.454E-08 | 9.169E-09 | 5.052E-09 | 3.318E-09 | 2.392E-09 | 1.828E-09 | 1.455E-09 | 1.192E-09 | 9.985E-10 | 8.514E-10 |
| W | 3.726E-08 | 1.859E-08 | 1.179E-08 | 6.549E-09 | 4.325E-09 | 3.132E-09 | 2.402E-09 | 1.918E-09 | 1.576E-09 | 1.324E-09 | 1.132E-09 |
| WNW | 5.811E-08 | 2.922E-08 | 1.864E-08 | 1.045E-08 | 6.947E-09 | 5.058E-09 | 3.898E-09 | 3.124E-09 | 2.576E-09 | 2.171E-09 | 1.861E-09 |
| NW | 6.811E-08 | 3.432E-08 | 2.194E-08 | 1.233E-08 | 8.220E-09 | 5.997E-09 | 4.630E-09 | 3.717E-09 | 3.070E-09 | 2.590E-09 | 2.223E-09 |
| NNW | 6.390E-08 | 3.212E-08 | 2.048E-08 | 1.145E-08 | 7.589E-09 | 5.509E-09 | 4.234E-09 | 3.385E-09 | 2.785E-09 | 2.342E-09 | 2.003E-09 |

## Table 2.7-142 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 3 of 3)

| | X/Q (sec/m$^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.735E-06 | 1.184E-06 | 3.414E-07 | 1.679E-07 | 1.026E-07 | 4.440E-08 | 1.522E-08 | 7.147E-09 | 4.352E-09 | 2.994E-09 |
| NNE | 8.555E-06 | 1.769E-06 | 5.130E-07 | 2.535E-07 | 1.556E-07 | 6.782E-08 | 2.360E-08 | 1.124E-08 | 6.914E-09 | 4.792E-09 |
| NE | 1.225E-05 | 2.548E-06 | 7.531E-07 | 3.777E-07 | 2.344E-07 | 1.043E-07 | 3.754E-08 | 1.835E-08 | 1.146E-08 | 8.033E-09 |
| ENE | 1.312E-05 | 2.730E-06 | 8.089E-07 | 4.063E-07 | 2.525E-07 | 1.125E-07 | 4.058E-08 | 1.984E-08 | 1.238E-08 | 8.664E-09 |
| E | 1.360E-05 | 2.829E-06 | 8.394E-07 | 4.221E-07 | 2.625E-07 | 1.171E-07 | 4.224E-08 | 2.062E-08 | 1.283E-08 | 8.954E-09 |
| ESE | 1.334E-05 | 2.775E-06 | 8.266E-07 | 4.169E-07 | 2.599E-07 | 1.165E-07 | 4.242E-08 | 2.088E-08 | 1.307E-08 | 9.165E-09 |
| SE | 1.110E-05 | 2.308E-06 | 6.860E-07 | 3.454E-07 | 2.150E-07 | 9.610E-08 | 3.476E-08 | 1.699E-08 | 1.058E-08 | 7.385E-09 |
| SSE | 1.047E-05 | 2.180E-06 | 6.496E-07 | 3.276E-07 | 2.043E-07 | 9.151E-08 | 3.325E-08 | 1.632E-08 | 1.019E-08 | 7.125E-09 |
| S | 7.128E-06 | 1.486E-06 | 4.428E-07 | 2.234E-07 | 1.392E-07 | 6.232E-08 | 2.261E-08 | 1.109E-08 | 6.923E-09 | 4.846E-09 |
| SSW | 4.243E-06 | 8.825E-07 | 2.605E-07 | 1.305E-07 | 8.091E-08 | 3.589E-08 | 1.282E-08 | 6.211E-09 | 3.848E-09 | 2.676E-09 |
| SW | 2.821E-06 | 5.763E-07 | 1.627E-07 | 7.870E-08 | 4.749E-08 | 2.012E-08 | 6.667E-09 | 3.058E-09 | 1.838E-09 | 1.253E-09 |
| WSW | 2.106E-06 | 4.311E-07 | 1.225E-07 | 5.963E-08 | 3.615E-08 | 1.545E-08 | 5.196E-09 | 2.413E-09 | 1.461E-09 | 1.001E-09 |
| W | 2.611E-06 | 5.359E-07 | 1.535E-07 | 7.515E-08 | 4.578E-08 | 1.972E-08 | 6.726E-09 | 3.158E-09 | 1.926E-09 | 1.328E-09 |
| WNW | 3.987E-06 | 8.201E-07 | 2.365E-07 | 1.164E-07 | 7.125E-08 | 3.094E-08 | 1.071E-08 | 5.097E-09 | 3.136E-09 | 2.176E-09 |
| NW | 4.651E-06 | 9.571E-07 | 2.764E-07 | 1.362E-07 | 8.346E-08 | 3.633E-08 | 1.264E-08 | 6.043E-09 | 3.731E-09 | 2.597E-09 |
| NNW | 4.335E-06 | 8.962E-07 | 2.593E-07 | 1.279E-07 | 7.832E-08 | 3.401E-08 | 1.174E-08 | 5.554E-09 | 3.399E-09 | 2.348E-09 |

## Table 2.7-143 Annual Average X/Q Values (8.0 Day Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 1 of 3)

Annual Average X/Q (sec/m$^3$)

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 3.805E-05 | 1.072E-05 | 5.132E-06 | 2.400E-06 | 8.712E-07 | 4.431E-07 | 2.682E-07 | 1.805E-07 | 1.303E-07 | 9.894E-08 | 7.799E-08 |
| NNE | 5.682E-05 | 1.600E-05 | 7.646E-06 | 3.577E-06 | 1.302E-06 | 6.637E-07 | 4.027E-07 | 2.716E-07 | 1.965E-07 | 1.494E-07 | 1.180E-07 |
| NE | 8.151E-05 | 2.298E-05 | 1.091E-05 | 5.119E-06 | 1.880E-06 | 9.677E-07 | 5.922E-07 | 4.023E-07 | 2.930E-07 | 2.242E-07 | 1.780E-07 |
| ENE | 8.742E-05 | 2.462E-05 | 1.168E-05 | 5.482E-06 | 2.016E-06 | 1.039E-06 | 6.364E-07 | 4.328E-07 | 3.154E-07 | 2.415E-07 | 1.918E-07 |
| E | 9.100E-05 | 2.557E-05 | 1.210E-05 | 5.681E-06 | 2.091E-06 | 1.079E-06 | 6.614E-07 | 4.501E-07 | 3.283E-07 | 2.515E-07 | 1.999E-07 |
| ESE | 8.960E-05 | 2.511E-05 | 1.185E-05 | 5.565E-06 | 2.052E-06 | 1.060E-06 | 6.512E-07 | 4.438E-07 | 3.241E-07 | 2.486E-07 | 1.978E-07 |
| SE | 7.441E-05 | 2.088E-05 | 9.863E-06 | 4.632E-06 | 1.707E-06 | 8.812E-07 | 5.408E-07 | 3.683E-07 | 2.688E-07 | 2.061E-07 | 1.639E-07 |
| SSE | 7.016E-05 | 1.969E-05 | 9.299E-06 | 4.370E-06 | 1.612E-06 | 8.333E-07 | 5.119E-07 | 3.489E-07 | 2.548E-07 | 1.955E-07 | 1.555E-07 |
| S | 4.768E-05 | 1.340E-05 | 6.336E-06 | 2.978E-06 | 1.099E-06 | 5.682E-07 | 3.490E-07 | 2.379E-07 | 1.737E-07 | 1.332E-07 | 1.060E-07 |
| SSW | 2.819E-05 | 7.957E-06 | 3.783E-06 | 1.775E-06 | 6.516E-07 | 3.353E-07 | 2.051E-07 | 1.393E-07 | 1.014E-07 | 7.757E-08 | 6.156E-08 |
| SW | 1.900E-05 | 5.281E-06 | 2.522E-06 | 1.175E-06 | 4.222E-07 | 2.124E-07 | 1.274E-07 | 8.498E-08 | 6.089E-08 | 4.592E-08 | 3.597E-08 |
| WSW | 1.417E-05 | 3.945E-06 | 1.881E-06 | 8.775E-07 | 3.162E-07 | 1.596E-07 | 9.602E-08 | 6.425E-08 | 4.616E-08 | 3.490E-08 | 2.740E-08 |
| W | 1.758E-05 | 4.896E-06 | 2.332E-06 | 1.088E-06 | 3.936E-07 | 1.995E-07 | 1.204E-07 | 8.084E-08 | 5.824E-08 | 4.414E-08 | 3.474E-08 |
| WNW | 2.682E-05 | 7.481E-06 | 3.557E-06 | 1.662E-06 | 6.029E-07 | 3.066E-07 | 1.856E-07 | 1.249E-07 | 9.025E-08 | 6.856E-08 | 5.407E-08 |
| NW | 3.129E-05 | 8.728E-06 | 4.146E-06 | 1.938E-06 | 7.035E-07 | 3.580E-07 | 2.169E-07 | 1.460E-07 | 1.055E-07 | 8.019E-08 | 6.327E-08 |
| NNW | 2.883E-05 | 8.112E-06 | 3.873E-06 | 1.814E-06 | 6.595E-07 | 3.360E-07 | 2.037E-07 | 1.372E-07 | 9.920E-08 | 7.539E-08 | 5.949E-08 |

## Table 2.7-143 Annual Average X/Q Values (8.0 Day Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 2 of 3)

| Annual Average X/Q (sec/$m^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 6.330E-08 | 3.021E-08 | 1.844E-08 | 9.640E-09 | 6.063E-09 | 4.214E-09 | 3.120E-09 | 2.413E-09 | 1.926E-09 | 1.575E-09 | 1.313E-09 |
| NNE | 9.591E-08 | 4.606E-08 | 2.825E-08 | 1.487E-08 | 9.406E-09 | 6.567E-09 | 4.881E-09 | 3.787E-09 | 3.032E-09 | 2.487E-09 | 2.079E-09 |
| NE | 1.454E-07 | 7.116E-08 | 4.427E-08 | 2.377E-08 | 1.523E-08 | 1.074E-08 | 8.052E-09 | 6.291E-09 | 5.068E-09 | 4.179E-09 | 3.509E-09 |
| ENE | 1.568E-07 | 7.691E-08 | 4.791E-08 | 2.578E-08 | 1.654E-08 | 1.168E-08 | 8.760E-09 | 6.849E-09 | 5.520E-09 | 4.553E-09 | 3.825E-09 |
| E | 1.635E-07 | 8.039E-08 | 5.016E-08 | 2.704E-08 | 1.738E-08 | 1.228E-08 | 9.215E-09 | 7.206E-09 | 5.809E-09 | 4.791E-09 | 4.025E-09 |
| ESE | 1.619E-07 | 7.996E-08 | 5.005E-08 | 2.711E-08 | 1.748E-08 | 1.239E-08 | 9.320E-09 | 7.305E-09 | 5.899E-09 | 4.875E-09 | 4.102E-09 |
| SE | 1.341E-07 | 6.606E-08 | 4.128E-08 | 2.230E-08 | 1.435E-08 | 1.015E-08 | 7.624E-09 | 5.966E-09 | 4.812E-09 | 3.971E-09 | 3.337E-09 |
| SSE | 1.273E-07 | 6.283E-08 | 3.931E-08 | 2.128E-08 | 1.371E-08 | 9.711E-09 | 7.300E-09 | 5.718E-09 | 4.616E-09 | 3.812E-09 | 3.206E-09 |
| S | 8.676E-08 | 4.279E-08 | 2.675E-08 | 1.447E-08 | 9.312E-09 | 6.590E-09 | 4.951E-09 | 3.876E-09 | 3.127E-09 | 2.581E-09 | 2.170E-09 |
| SSW | 5.027E-08 | 2.458E-08 | 1.527E-08 | 8.182E-09 | 5.234E-09 | 3.686E-09 | 2.757E-09 | 2.151E-09 | 1.730E-09 | 1.424E-09 | 1.195E-09 |
| SW | 2.904E-08 | 1.358E-08 | 8.164E-09 | 4.178E-09 | 2.592E-09 | 1.783E-09 | 1.308E-09 | 1.005E-09 | 7.972E-10 | 6.486E-10 | 5.383E-10 |
| WSW | 2.216E-08 | 1.045E-08 | 6.320E-09 | 3.265E-09 | 2.040E-09 | 1.411E-09 | 1.041E-09 | 8.025E-10 | 6.390E-10 | 5.215E-10 | 4.340E-10 |
| W | 2.816E-08 | 1.338E-08 | 8.147E-09 | 4.246E-09 | 2.669E-09 | 1.854E-09 | 1.373E-09 | 1.062E-09 | 8.476E-10 | 6.935E-10 | 5.783E-10 |
| WNW | 4.391E-08 | 2.102E-08 | 1.287E-08 | 6.763E-09 | 4.277E-09 | 2.987E-09 | 2.220E-09 | 1.723E-09 | 1.380E-09 | 1.133E-09 | 9.471E-10 |
| NW | 5.140E-08 | 2.465E-08 | 1.511E-08 | 7.957E-09 | 5.041E-09 | 3.525E-09 | 2.624E-09 | 2.039E-09 | 1.635E-09 | 1.342E-09 | 1.123E-09 |
| NNW | 4.832E-08 | 2.314E-08 | 1.416E-08 | 7.431E-09 | 4.688E-09 | 3.267E-09 | 2.424E-09 | 1.878E-09 | 1.502E-09 | 1.230E-09 | 1.027E-09 |

## Table 2.7-143 Annual Average X/Q Values (8.0 Day Decay, Undepleted) for Ground Level Release (Based on 1985-1989 met data) (Sheet 3 of 3)

X/Q (sec/m$^3$) for Each Segment

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.160E-06 | 1.021E-06 | 2.798E-07 | 1.327E-07 | 7.876E-08 | 3.233E-08 | 1.001E-08 | 4.270E-09 | 2.429E-09 | 1.582E-09 |
| NNE | 7.695E-06 | 1.524E-06 | 4.198E-07 | 2.000E-07 | 1.191E-07 | 4.922E-08 | 1.542E-08 | 6.650E-09 | 3.812E-09 | 2.497E-09 |
| NE | 1.102E-05 | 2.194E-06 | 6.164E-07 | 2.980E-07 | 1.796E-07 | 7.570E-08 | 2.453E-08 | 1.086E-08 | 6.328E-09 | 4.194E-09 |
| ENE | 1.180E-05 | 2.352E-06 | 6.623E-07 | 3.208E-07 | 1.936E-07 | 8.177E-08 | 2.659E-08 | 1.181E-08 | 6.889E-09 | 4.570E-09 |
| E | 1.224E-05 | 2.439E-06 | 6.881E-07 | 3.338E-07 | 2.017E-07 | 8.542E-08 | 2.788E-08 | 1.241E-08 | 7.248E-09 | 4.809E-09 |
| ESE | 1.200E-05 | 2.392E-06 | 6.774E-07 | 3.296E-07 | 1.996E-07 | 8.488E-08 | 2.793E-08 | 1.252E-08 | 7.345E-09 | 4.892E-09 |
| SE | 9.986E-06 | 1.990E-06 | 5.626E-07 | 2.733E-07 | 1.653E-07 | 7.016E-08 | 2.299E-08 | 1.026E-08 | 6.000E-09 | 3.985E-09 |
| SSE | 9.417E-06 | 1.879E-06 | 5.324E-07 | 2.591E-07 | 1.569E-07 | 6.670E-08 | 2.192E-08 | 9.813E-09 | 5.750E-09 | 3.826E-09 |
| S | 6.414E-06 | 1.281E-06 | 3.630E-07 | 1.766E-07 | 1.070E-07 | 4.543E-08 | 1.491E-08 | 6.660E-09 | 3.898E-09 | 2.591E-09 |
| SSW | 3.818E-06 | 7.606E-07 | 2.135E-07 | 1.032E-07 | 6.212E-08 | 2.615E-08 | 8.447E-09 | 3.727E-09 | 2.164E-09 | 1.430E-09 |
| SW | 2.537E-06 | 4.963E-07 | 1.331E-07 | 6.207E-08 | 3.635E-08 | 1.461E-08 | 4.359E-09 | 1.809E-09 | 1.012E-09 | 6.518E-10 |
| WSW | 1.894E-06 | 3.713E-07 | 1.003E-07 | 4.704E-08 | 2.768E-08 | 1.122E-08 | 3.400E-09 | 1.431E-09 | 8.083E-10 | 5.239E-10 |
| W | 2.349E-06 | 4.617E-07 | 1.257E-07 | 5.933E-08 | 3.509E-08 | 1.434E-08 | 4.412E-09 | 1.879E-09 | 1.069E-09 | 6.965E-10 |
| WNW | 3.587E-06 | 7.065E-07 | 1.936E-07 | 9.190E-08 | 5.460E-08 | 2.248E-08 | 7.015E-09 | 3.024E-09 | 1.735E-09 | 1.137E-09 |
| NW | 4.183E-06 | 8.242E-07 | 2.262E-07 | 1.074E-07 | 6.389E-08 | 2.635E-08 | 8.250E-09 | 3.569E-09 | 2.052E-09 | 1.348E-09 |
| NNW | 3.900E-06 | 7.722E-07 | 2.124E-07 | 1.010E-07 | 6.007E-08 | 2.474E-08 | 7.707E-09 | 3.308E-09 | 1.891E-09 | 1.236E-09 |

## Table 2.7-144 Annual Average D/Q Values for Ground Level Release (Based on 1985-1989 met data) (Sheet 1 of 3)

| Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 1.437E-07 | 4.859E-08 | 2.495E-08 | 1.186E-08 | 4.261E-09 | 2.113E-09 | 1.244E-09 | 8.146E-10 | 5.732E-10 | 4.248E-10 | 3.274E-10 |
| NNE | 2.233E-07 | 7.550E-08 | 3.877E-08 | 1.843E-08 | 6.620E-09 | 3.283E-09 | 1.933E-09 | 1.266E-09 | 8.907E-10 | 6.601E-10 | 5.087E-10 |
| NE | 2.287E-07 | 7.732E-08 | 3.970E-08 | 1.887E-08 | 6.779E-09 | 3.362E-09 | 1.980E-09 | 1.296E-09 | 9.121E-10 | 6.760E-10 | 5.209E-10 |
| ENE | 2.089E-07 | 7.064E-08 | 3.627E-08 | 1.724E-08 | 6.194E-09 | 3.072E-09 | 1.809E-09 | 1.184E-09 | 8.333E-10 | 6.175E-10 | 4.759E-10 |
| E | 1.918E-07 | 6.487E-08 | 3.331E-08 | 1.584E-08 | 5.688E-09 | 2.821E-09 | 1.661E-09 | 1.088E-09 | 7.653E-10 | 5.672E-10 | 4.371E-10 |
| ESE | 1.839E-07 | 6.218E-08 | 3.192E-08 | 1.518E-08 | 5.452E-09 | 2.704E-09 | 1.592E-09 | 1.042E-09 | 7.335E-10 | 5.436E-10 | 4.189E-10 |
| SE | 1.554E-07 | 5.256E-08 | 2.698E-08 | 1.283E-08 | 4.608E-09 | 2.285E-09 | 1.346E-09 | 8.811E-10 | 6.200E-10 | 4.595E-10 | 3.541E-10 |
| SSE | 1.428E-07 | 4.828E-08 | 2.479E-08 | 1.178E-08 | 4.233E-09 | 2.099E-09 | 1.236E-09 | 8.094E-10 | 5.695E-10 | 4.221E-10 | 3.253E-10 |
| S | 1.002E-07 | 3.387E-08 | 1.739E-08 | 8.267E-09 | 2.970E-09 | 1.473E-09 | 8.672E-10 | 5.678E-10 | 3.995E-10 | 2.961E-10 | 2.282E-10 |
| SSW | 7.383E-08 | 2.497E-08 | 1.282E-08 | 6.094E-09 | 2.189E-09 | 1.086E-09 | 6.392E-10 | 4.185E-10 | 2.945E-10 | 2.183E-10 | 1.682E-10 |
| SW | 1.228E-07 | 4.152E-08 | 2.132E-08 | 1.014E-08 | 3.641E-09 | 1.806E-09 | 1.063E-09 | 6.961E-10 | 4.898E-10 | 3.630E-10 | 2.797E-10 |
| WSW | 8.181E-08 | 2.766E-08 | 1.420E-08 | 6.753E-09 | 2.426E-09 | 1.203E-09 | 7.083E-10 | 4.638E-10 | 3.263E-10 | 2.419E-10 | 1.864E-10 |
| W | 9.348E-08 | 3.161E-08 | 1.623E-08 | 7.716E-09 | 2.772E-09 | 1.375E-09 | 8.093E-10 | 5.300E-10 | 3.729E-10 | 2.764E-10 | 2.130E-10 |
| WNW | 1.214E-07 | 4.106E-08 | 2.108E-08 | 1.002E-08 | 3.601E-09 | 1.786E-09 | 1.051E-09 | 6.884E-10 | 4.844E-10 | 3.590E-10 | 2.767E-10 |
| NW | 1.354E-07 | 4.578E-08 | 2.351E-08 | 1.118E-08 | 4.014E-09 | 1.991E-09 | 1.172E-09 | 7.675E-10 | 5.401E-10 | 4.002E-10 | 3.084E-10 |
| NNW | 1.087E-07 | 3.677E-08 | 1.888E-08 | 8.975E-09 | 3.224E-09 | 1.599E-09 | 9.414E-10 | 6.164E-10 | 4.338E-10 | 3.215E-10 | 2.477E-10 |

# Table 2.7-144 Annual Average D/Q Values for Ground Level Release (Based on 1985-1989 met data) (Sheet 2 of 3)

| Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 2.601E-10 | 1.155E-10 | 6.998E-11 | 3.537E-11 | 2.141E-11 | 1.435E-11 | 1.029E-11 | 7.724E-12 | 6.005E-12 | 4.797E-12 | 3.916E-12 |
| NNE | 4.041E-10 | 1.795E-10 | 1.087E-10 | 5.496E-11 | 3.327E-11 | 2.230E-11 | 1.598E-11 | 1.200E-11 | 9.331E-12 | 7.454E-12 | 6.084E-12 |
| NE | 4.138E-10 | 1.838E-10 | 1.114E-10 | 5.629E-11 | 3.407E-11 | 2.284E-11 | 1.637E-11 | 1.229E-11 | 9.556E-12 | 7.633E-12 | 6.230E-12 |
| ENE | 3.781E-10 | 1.680E-10 | 1.017E-10 | 5.142E-11 | 3.112E-11 | 2.087E-11 | 1.495E-11 | 1.123E-11 | 8.730E-12 | 6.974E-12 | 5.692E-12 |
| E | 3.472E-10 | 1.542E-10 | 9.344E-11 | 4.723E-11 | 2.858E-11 | 1.917E-11 | 1.373E-11 | 1.031E-11 | 8.018E-12 | 6.405E-12 | 5.228E-12 |
| ESE | 3.328E-10 | 1.478E-10 | 8.955E-11 | 4.526E-11 | 2.740E-11 | 1.837E-11 | 1.316E-11 | 9.883E-12 | 7.684E-12 | 6.138E-12 | 5.010E-12 |
| SE | 2.813E-10 | 1.250E-10 | 7.570E-11 | 3.826E-11 | 2.316E-11 | 1.553E-11 | 1.113E-11 | 8.354E-12 | 6.495E-12 | 5.189E-12 | 4.235E-12 |
| SSE | 2.584E-10 | 1.148E-10 | 6.953E-11 | 3.515E-11 | 2.127E-11 | 1.426E-11 | 1.022E-11 | 7.674E-12 | 5.967E-12 | 4.766E-12 | 3.890E-12 |
| S | 1.813E-10 | 8.053E-11 | 4.878E-11 | 2.466E-11 | 1.492E-11 | 1.001E-11 | 7.169E-12 | 5.383E-12 | 4.186E-12 | 3.344E-12 | 2.729E-12 |
| SSW | 1.336E-10 | 5.936E-11 | 3.596E-11 | 1.817E-11 | 1.100E-11 | 7.375E-12 | 5.285E-12 | 3.968E-12 | 3.085E-12 | 2.465E-12 | 2.012E-12 |
| SW | 2.222E-10 | 9.873E-11 | 5.981E-11 | 3.023E-11 | 1.830E-11 | 1.227E-11 | 8.790E-12 | 6.600E-12 | 5.132E-12 | 4.099E-12 | 3.346E-12 |
| WSW | 1.481E-10 | 6.578E-11 | 3.984E-11 | 2.014E-11 | 1.219E-11 | 8.173E-12 | 5.856E-12 | 4.397E-12 | 3.419E-12 | 2.731E-12 | 2.229E-12 |
| W | 1.692E-10 | 7.516E-11 | 4.553E-11 | 2.301E-11 | 1.393E-11 | 9.338E-12 | 6.691E-12 | 5.025E-12 | 3.907E-12 | 3.121E-12 | 2.547E-12 |
| WNW | 2.198E-10 | 9.764E-11 | 5.914E-11 | 2.989E-11 | 1.809E-11 | 1.213E-11 | 8.693E-12 | 6.527E-12 | 5.075E-12 | 4.054E-12 | 3.309E-12 |
| NW | 2.450E-10 | 1.089E-10 | 6.594E-11 | 3.333E-11 | 2.017E-11 | 1.353E-11 | 9.691E-12 | 7.277E-12 | 5.658E-12 | 4.520E-12 | 3.689E-12 |
| NNW | 1.968E-10 | 8.742E-11 | 5.296E-11 | 2.677E-11 | 1.620E-11 | 1.086E-11 | 7.783E-12 | 5.845E-12 | 4.544E-12 | 3.630E-12 | 2.963E-12 |

## Table 2.7-144 Annual Average D/Q Values for Ground Level Release (Based on 1985-1989 met data) (Sheet 3 of 3)

| Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 2.439E-08 | 4.995E-09 | 1.304E-09 | 5.857E-10 | 3.313E-10 | 1.274E-10 | 3.686E-11 | 1.461E-11 | 7.801E-12 | 4.829E-12 |
| NNE | 3.789E-08 | 7.761E-09 | 2.026E-09 | 9.100E-10 | 5.148E-10 | 1.980E-10 | 5.727E-11 | 2.270E-11 | 1.212E-11 | 7.503E-12 |
| NE | 3.880E-08 | 7.948E-09 | 2.075E-09 | 9.319E-10 | 5.272E-10 | 2.027E-10 | 5.865E-11 | 2.325E-11 | 1.241E-11 | 7.683E-12 |
| ENE | 3.545E-08 | 7.261E-09 | 1.896E-09 | 8.514E-10 | 4.816E-10 | 1.852E-10 | 5.358E-11 | 2.124E-11 | 1.134E-11 | 7.019E-12 |
| E | 3.256E-08 | 6.669E-09 | 1.741E-09 | 7.819E-10 | 4.423E-10 | 1.701E-10 | 4.921E-11 | 1.950E-11 | 1.042E-11 | 6.447E-12 |
| ESE | 3.120E-08 | 6.391E-09 | 1.669E-09 | 7.494E-10 | 4.239E-10 | 1.630E-10 | 4.716E-11 | 1.869E-11 | 9.982E-12 | 6.178E-12 |
| SE | 2.638E-08 | 5.403E-09 | 1.410E-09 | 6.334E-10 | 3.583E-10 | 1.378E-10 | 3.987E-11 | 1.580E-11 | 8.438E-12 | 5.223E-12 |
| SSE | 2.423E-08 | 4.963E-09 | 1.296E-09 | 5.819E-10 | 3.292E-10 | 1.266E-10 | 3.662E-11 | 1.451E-11 | 7.751E-12 | 4.798E-12 |
| S | 1.700E-08 | 3.482E-09 | 9.089E-10 | 4.082E-10 | 2.309E-10 | 8.881E-11 | 2.569E-11 | 1.018E-11 | 5.438E-12 | 3.366E-12 |
| SSW | 1.253E-08 | 2.566E-09 | 6.700E-10 | 3.009E-10 | 1.702E-10 | 6.546E-11 | 1.894E-11 | 7.506E-12 | 4.008E-12 | 2.481E-12 |
| SW | 2.084E-08 | 4.269E-09 | 1.114E-09 | 5.005E-10 | 2.831E-10 | 1.089E-10 | 3.150E-11 | 1.248E-11 | 6.666E-12 | 4.126E-12 |
| WSW | 1.388E-08 | 2.844E-09 | 7.424E-10 | 3.334E-10 | 1.886E-10 | 7.254E-11 | 2.098E-11 | 8.317E-12 | 4.441E-12 | 2.749E-12 |
| W | 1.586E-08 | 3.250E-09 | 8.483E-10 | 3.810E-10 | 2.155E-10 | 8.289E-11 | 2.398E-11 | 9.504E-12 | 5.075E-12 | 3.141E-12 |
| WNW | 2.061E-08 | 4.221E-09 | 1.102E-09 | 4.949E-10 | 2.800E-10 | 1.077E-10 | 3.115E-11 | 1.235E-11 | 6.593E-12 | 4.081E-12 |
| NW | 2.298E-08 | 4.706E-09 | 1.229E-09 | 5.518E-10 | 3.122E-10 | 1.200E-10 | 3.473E-11 | 1.376E-11 | 7.350E-12 | 4.549E-12 |
| NNW | 1.845E-08 | 3.780E-09 | 9.867E-10 | 4.432E-10 | 2.507E-10 | 9.641E-11 | 2.789E-11 | 1.105E-11 | 5.903E-12 | 3.654E-12 |

## Table 2.7-145 Annual Average Χ/Q Values (no Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

**Annual Average Χ/Q (sec/$m^3$)**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.181E-06 | 8.309E-07 | 5.494E-07 | 3.436E-07 | 1.817E-07 | 1.156E-07 | 8.120E-08 | 6.078E-08 | 4.761E-08 | 3.857E-08 | 3.224E-08 |
| NNE | 3.826E-06 | 1.402E-06 | 8.670E-07 | 5.074E-07 | 2.560E-07 | 1.608E-07 | 1.125E-07 | 8.426E-08 | 6.758E-08 | 5.596E-08 | 4.680E-08 |
| NE | 5.537E-06 | 1.893E-06 | 1.089E-06 | 5.947E-07 | 2.742E-07 | 1.665E-07 | 1.157E-07 | 8.693E-08 | 6.878E-08 | 5.643E-08 | 4.757E-08 |
| ENE | 4.315E-06 | 1.509E-06 | 8.787E-07 | 4.863E-07 | 2.308E-07 | 1.432E-07 | 1.010E-07 | 7.676E-08 | 6.125E-08 | 5.059E-08 | 4.287E-08 |
| E | 3.637E-06 | 1.284E-06 | 7.471E-07 | 4.131E-07 | 1.966E-07 | 1.228E-07 | 8.720E-08 | 6.671E-08 | 5.356E-08 | 4.450E-08 | 3.791E-08 |
| ESE | 3.687E-06 | 1.289E-06 | 7.375E-07 | 4.022E-07 | 1.882E-07 | 1.158E-07 | 8.131E-08 | 6.165E-08 | 4.917E-08 | 4.065E-08 | 3.450E-08 |
| SE | 3.068E-06 | 1.082E-06 | 6.246E-07 | 3.430E-07 | 1.617E-07 | 1.001E-07 | 7.049E-08 | 5.357E-08 | 4.280E-08 | 3.541E-08 | 3.007E-08 |
| SSE | 3.002E-06 | 1.038E-06 | 5.959E-07 | 3.271E-07 | 1.549E-07 | 9.586E-08 | 6.738E-08 | 5.104E-08 | 4.063E-08 | 3.351E-08 | 2.838E-08 |
| S | 2.535E-06 | 8.430E-07 | 4.731E-07 | 2.552E-07 | 1.180E-07 | 7.221E-08 | 5.049E-08 | 3.817E-08 | 3.038E-08 | 2.506E-08 | 2.124E-08 |
| SSW | 1.685E-06 | 5.886E-07 | 3.439E-07 | 1.908E-07 | 9.013E-08 | 5.559E-08 | 3.897E-08 | 2.944E-08 | 2.337E-08 | 1.921E-08 | 1.620E-08 |
| SW | 1.485E-06 | 6.187E-07 | 4.325E-07 | 2.710E-07 | 1.370E-07 | 8.347E-08 | 5.662E-08 | 4.123E-08 | 3.157E-08 | 2.510E-08 | 2.055E-08 |
| WSW | 1.095E-06 | 4.500E-07 | 3.107E-07 | 1.929E-07 | 9.623E-08 | 5.838E-08 | 3.956E-08 | 2.881E-08 | 2.209E-08 | 1.758E-08 | 1.456E-08 |
| W | 1.419E-06 | 5.546E-07 | 3.699E-07 | 2.275E-07 | 1.128E-07 | 6.845E-08 | 4.646E-08 | 3.391E-08 | 2.605E-08 | 2.078E-08 | 1.706E-08 |
| WNW | 1.957E-06 | 7.444E-07 | 4.875E-07 | 2.986E-07 | 1.487E-07 | 9.108E-08 | 6.237E-08 | 4.588E-08 | 3.549E-08 | 2.849E-08 | 2.353E-08 |
| NW | 2.141E-06 | 8.304E-07 | 5.508E-07 | 3.389E-07 | 1.696E-07 | 1.040E-07 | 7.118E-08 | 5.235E-08 | 4.048E-08 | 3.248E-08 | 2.693E-08 |
| NNW | 1.815E-06 | 6.758E-07 | 4.463E-07 | 2.772E-07 | 1.432E-07 | 8.973E-08 | 6.235E-08 | 4.635E-08 | 3.613E-08 | 2.918E-08 | 2.444E-08 |

## Table 2.7-145 Annual Average X/Q Values (no Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 2.752E-08 | 1.614E-08 | 1.135E-08 | 7.253E-09 | 5.258E-09 | 4.042E-09 | 3.201E-09 | 2.603E-09 | 2.175E-09 | 1.856E-09 | 1.612E-09 |
| NNE | 3.997E-08 | 2.253E-08 | 1.539E-08 | 9.406E-09 | 6.634E-09 | 5.060E-09 | 4.057E-09 | 3.368E-09 | 2.868E-09 | 2.490E-09 | 2.195E-09 |
| NE | 4.097E-08 | 2.458E-08 | 1.761E-08 | 1.152E-08 | 8.522E-09 | 6.745E-09 | 5.575E-09 | 4.749E-09 | 4.136E-09 | 3.663E-09 | 3.288E-09 |
| ENE | 3.709E-08 | 2.265E-08 | 1.641E-08 | 1.091E-08 | 8.171E-09 | 6.533E-09 | 5.448E-09 | 4.677E-09 | 4.102E-09 | 3.657E-09 | 3.301E-09 |
| E | 3.296E-08 | 2.019E-08 | 1.461E-08 | 9.626E-09 | 7.119E-09 | 5.613E-09 | 4.613E-09 | 3.903E-09 | 3.374E-09 | 2.966E-09 | 2.641E-09 |
| ESE | 2.992E-08 | 1.836E-08 | 1.338E-08 | 8.965E-09 | 6.741E-09 | 5.398E-09 | 4.499E-09 | 3.857E-09 | 3.376E-09 | 3.002E-09 | 2.704E-09 |
| SE | 2.608E-08 | 1.605E-08 | 1.172E-08 | 7.876E-09 | 5.944E-09 | 4.779E-09 | 4.002E-09 | 3.448E-09 | 3.032E-09 | 2.710E-09 | 2.452E-09 |
| SSE | 2.454E-08 | 1.561E-08 | 1.185E-08 | 8.679E-09 | 7.102E-09 | 6.124E-09 | 5.421E-09 | 4.860E-09 | 4.377E-09 | 3.943E-09 | 3.543E-09 |
| S | 1.838E-08 | 1.148E-08 | 8.534E-09 | 5.961E-09 | 4.665E-09 | 3.879E-09 | 3.347E-09 | 2.957E-09 | 2.655E-09 | 2.411E-09 | 2.205E-09 |
| SSW | 1.396E-08 | 8.444E-09 | 6.082E-09 | 4.016E-09 | 2.998E-09 | 2.394E-09 | 1.995E-09 | 1.712E-09 | 1.501E-09 | 1.337E-09 | 1.205E-09 |
| SW | 1.722E-08 | 9.213E-09 | 6.062E-09 | 3.516E-09 | 2.393E-09 | 1.775E-09 | 1.392E-09 | 1.134E-09 | 9.500E-10 | 8.129E-10 | 7.074E-10 |
| WSW | 1.233E-08 | 6.668E-09 | 4.436E-09 | 2.628E-09 | 1.824E-09 | 1.377E-09 | 1.096E-09 | 9.032E-10 | 7.633E-10 | 6.569E-10 | 5.729E-10 |
| W | 1.435E-08 | 8.097E-09 | 5.579E-09 | 3.499E-09 | 2.513E-09 | 1.908E-09 | 1.498E-09 | 1.217E-09 | 1.017E-09 | 8.681E-10 | 7.540E-10 |
| WNW | 1.988E-08 | 1.168E-08 | 8.323E-09 | 5.467E-09 | 3.973E-09 | 2.987E-09 | 2.343E-09 | 1.909E-09 | 1.600E-09 | 1.370E-09 | 1.192E-09 |
| NW | 2.285E-08 | 1.314E-08 | 9.218E-09 | 5.953E-09 | 4.387E-09 | 3.421E-09 | 2.736E-09 | 2.238E-09 | 1.877E-09 | 1.607E-09 | 1.400E-09 |
| NNW | 2.091E-08 | 1.238E-08 | 8.847E-09 | 5.815E-09 | 4.248E-09 | 3.216E-09 | 2.520E-09 | 2.049E-09 | 1.714E-09 | 1.465E-09 | 1.274E-09 |

## Table 2.7-145 Annual Average X/Q Values (no Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

| X/Q (sec/m³) for Each Segment | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| Sector | .5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| N | 5.205E-07 | 1.883E-07 | 8.222E-08 | 4.793E-08 | 3.237E-08 | 1.654E-08 | 7.277E-09 | 4.030E-09 | 2.611E-09 | 1.860E-09 |
| NNE | 8.261E-07 | 2.695E-07 | 1.141E-07 | 6.792E-08 | 4.699E-08 | 2.323E-08 | 9.504E-09 | 5.078E-09 | 3.374E-09 | 2.493E-09 |
| NE | 1.048E-06 | 2.976E-07 | 1.177E-07 | 6.926E-08 | 4.775E-08 | 2.513E-08 | 1.154E-08 | 6.751E-09 | 4.752E-09 | 3.664E-09 |
| ENE | 8.444E-07 | 2.487E-07 | 1.026E-07 | 6.162E-08 | 4.302E-08 | 2.309E-08 | 1.092E-08 | 6.536E-09 | 4.678E-09 | 3.657E-09 |
| E | 7.181E-07 | 2.119E-07 | 8.849E-08 | 5.387E-08 | 3.803E-08 | 2.055E-08 | 9.619E-09 | 5.615E-09 | 3.904E-09 | 2.967E-09 |
| ESE | 7.112E-07 | 2.036E-07 | 8.266E-08 | 4.949E-08 | 3.463E-08 | 1.871E-08 | 8.957E-09 | 5.397E-09 | 3.857E-09 | 3.003E-09 |
| SE | 6.011E-07 | 1.746E-07 | 7.161E-08 | 4.306E-08 | 3.017E-08 | 1.635E-08 | 7.871E-09 | 4.779E-09 | 3.448E-09 | 2.710E-09 |
| SSE | 5.747E-07 | 1.669E-07 | 6.844E-08 | 4.089E-08 | 2.848E-08 | 1.592E-08 | 8.684E-09 | 6.104E-09 | 4.836E-09 | 3.924E-09 |
| S | 4.585E-07 | 1.282E-07 | 5.135E-08 | 3.058E-08 | 2.131E-08 | 1.170E-08 | 5.957E-09 | 3.876E-09 | 2.954E-09 | 2.407E-09 |
| SSW | 3.302E-07 | 9.716E-08 | 3.959E-08 | 2.352E-08 | 1.626E-08 | 8.620E-09 | 4.023E-09 | 2.395E-09 | 1.712E-09 | 1.336E-09 |
| SW | 4.021E-07 | 1.430E-07 | 5.762E-08 | 3.187E-08 | 2.066E-08 | 9.592E-09 | 3.582E-09 | 1.787E-09 | 1.138E-09 | 8.144E-10 |
| WSW | 2.893E-07 | 1.009E-07 | 4.028E-08 | 2.229E-08 | 1.463E-08 | 6.933E-09 | 2.672E-09 | 1.383E-09 | 9.049E-10 | 6.573E-10 |
| W | 3.476E-07 | 1.186E-07 | 4.730E-08 | 2.629E-08 | 1.716E-08 | 8.366E-09 | 3.523E-09 | 1.905E-09 | 1.221E-09 | 8.699E-10 |
| WNW | 4.606E-07 | 1.564E-07 | 6.343E-08 | 3.579E-08 | 2.365E-08 | 1.201E-08 | 5.438E-09 | 2.992E-09 | 1.915E-09 | 1.372E-09 |
| NW | 5.188E-07 | 1.781E-07 | 7.240E-08 | 4.082E-08 | 2.706E-08 | 1.356E-08 | 5.983E-09 | 3.405E-09 | 2.243E-09 | 1.610E-09 |
| NNW | 4.222E-07 | 1.492E-07 | 6.325E-08 | 3.640E-08 | 2.454E-08 | 1.270E-08 | 5.793E-09 | 3.213E-09 | 2.056E-09 | 1.468E-09 |

## Table 2.7-146 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

**Annual Average X/Q (sec/m$^3$)**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.181E-06 | 8.302E-07 | 5.488E-07 | 3.431E-07 | 1.813E-07 | 1.153E-07 | 8.090E-08 | 6.050E-08 | 4.735E-08 | 3.833E-08 | 3.201E-08 |
| NNE | 3.824E-06 | 1.401E-06 | 8.660E-07 | 5.066E-07 | 2.555E-07 | 1.603E-07 | 1.121E-07 | 8.390E-08 | 6.724E-08 | 5.564E-08 | 4.649E-08 |
| NE | 5.535E-06 | 1.892E-06 | 1.088E-06 | 5.939E-07 | 2.736E-07 | 1.661E-07 | 1.153E-07 | 8.656E-08 | 6.844E-08 | 5.611E-08 | 4.726E-08 |
| ENE | 4.313E-06 | 1.508E-06 | 8.776E-07 | 4.855E-07 | 2.303E-07 | 1.428E-07 | 1.006E-07 | 7.641E-08 | 6.092E-08 | 5.028E-08 | 4.258E-08 |
| E | 3.636E-06 | 1.283E-06 | 7.461E-07 | 4.124E-07 | 1.962E-07 | 1.224E-07 | 8.685E-08 | 6.638E-08 | 5.326E-08 | 4.421E-08 | 3.763E-08 |
| ESE | 3.686E-06 | 1.288E-06 | 7.366E-07 | 4.015E-07 | 1.877E-07 | 1.155E-07 | 8.098E-08 | 6.135E-08 | 4.889E-08 | 4.038E-08 | 3.425E-08 |
| SE | 3.066E-06 | 1.081E-06 | 6.238E-07 | 3.425E-07 | 1.613E-07 | 9.973E-08 | 7.020E-08 | 5.331E-08 | 4.255E-08 | 3.518E-08 | 2.985E-08 |
| SSE | 3.000E-06 | 1.037E-06 | 5.951E-07 | 3.266E-07 | 1.545E-07 | 9.556E-08 | 6.711E-08 | 5.080E-08 | 4.041E-08 | 3.330E-08 | 2.817E-08 |
| S | 2.534E-06 | 8.423E-07 | 4.726E-07 | 2.548E-07 | 1.178E-07 | 7.199E-08 | 5.030E-08 | 3.800E-08 | 3.022E-08 | 2.491E-08 | 2.109E-08 |
| SSW | 1.684E-06 | 5.882E-07 | 3.435E-07 | 1.906E-07 | 8.994E-08 | 5.543E-08 | 3.883E-08 | 2.931E-08 | 2.325E-08 | 1.909E-08 | 1.610E-08 |
| SW | 1.484E-06 | 6.183E-07 | 4.321E-07 | 2.707E-07 | 1.367E-07 | 8.327E-08 | 5.645E-08 | 4.108E-08 | 3.144E-08 | 2.498E-08 | 2.043E-08 |
| WSW | 1.094E-06 | 4.497E-07 | 3.104E-07 | 1.927E-07 | 9.606E-08 | 5.824E-08 | 3.944E-08 | 2.871E-08 | 2.199E-08 | 1.749E-08 | 1.447E-08 |
| W | 1.418E-06 | 5.542E-07 | 3.695E-07 | 2.272E-07 | 1.126E-07 | 6.828E-08 | 4.631E-08 | 3.378E-08 | 2.593E-08 | 2.067E-08 | 1.696E-08 |
| WNW | 1.957E-06 | 7.438E-07 | 4.870E-07 | 2.982E-07 | 1.484E-07 | 9.083E-08 | 6.215E-08 | 4.569E-08 | 3.531E-08 | 2.832E-08 | 2.337E-08 |
| NW | 2.140E-06 | 8.298E-07 | 5.502E-07 | 3.385E-07 | 1.693E-07 | 1.037E-07 | 7.094E-08 | 5.213E-08 | 4.028E-08 | 3.230E-08 | 2.676E-08 |
| NNW | 1.814E-06 | 6.753E-07 | 4.458E-07 | 2.768E-07 | 1.429E-07 | 8.948E-08 | 6.213E-08 | 4.615E-08 | 3.595E-08 | 2.901E-08 | 2.428E-08 |

## Table 2.7-146 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

| | Annual Average X/Q (sec/m³) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 2.729E-08 | 1.593E-08 | 1.115E-08 | 7.054E-09 | 5.061E-09 | 3.850E-09 | 3.018E-09 | 2.430E-09 | 2.011E-09 | 1.701E-09 | 1.463E-09 |
| NNE | 3.968E-08 | 2.228E-08 | 1.516E-08 | 9.189E-09 | 6.428E-09 | 4.862E-09 | 3.867E-09 | 3.183E-09 | 2.689E-09 | 2.315E-09 | 2.025E-09 |
| NE | 4.067E-08 | 2.431E-08 | 1.735E-08 | 1.126E-08 | 8.260E-09 | 6.485E-09 | 5.317E-09 | 4.493E-09 | 3.882E-09 | 3.410E-09 | 3.036E-09 |
| ENE | 3.681E-08 | 2.238E-08 | 1.616E-08 | 1.066E-08 | 7.912E-09 | 6.273E-09 | 5.186E-09 | 4.415E-09 | 3.839E-09 | 3.393E-09 | 3.036E-09 |
| E | 3.269E-08 | 1.993E-08 | 1.436E-08 | 9.372E-09 | 6.867E-09 | 5.364E-09 | 4.367E-09 | 3.660E-09 | 3.134E-09 | 2.729E-09 | 2.408E-09 |
| ESE | 2.968E-08 | 1.813E-08 | 1.315E-08 | 8.729E-09 | 6.503E-09 | 5.158E-09 | 4.259E-09 | 3.617E-09 | 3.137E-09 | 2.763E-09 | 2.466E-09 |
| SE | 2.586E-08 | 1.585E-08 | 1.151E-08 | 7.668E-09 | 5.732E-09 | 4.564E-09 | 3.785E-09 | 3.229E-09 | 2.812E-09 | 2.488E-09 | 2.229E-09 |
| SSE | 2.435E-08 | 1.541E-08 | 1.166E-08 | 8.454E-09 | 6.851E-09 | 5.847E-09 | 5.122E-09 | 4.542E-09 | 4.047E-09 | 3.607E-09 | 3.206E-09 |
| S | 1.824E-08 | 1.134E-08 | 8.397E-09 | 5.812E-09 | 4.507E-09 | 3.711E-09 | 3.171E-09 | 2.774E-09 | 2.465E-09 | 2.215E-09 | 2.005E-09 |
| SSW | 1.386E-08 | 8.347E-09 | 5.988E-09 | 3.920E-09 | 2.899E-09 | 2.294E-09 | 1.894E-09 | 1.610E-09 | 1.397E-09 | 1.232E-09 | 1.099E-09 |
| SW | 1.711E-08 | 9.119E-09 | 5.977E-09 | 3.439E-09 | 2.321E-09 | 1.708E-09 | 1.328E-09 | 1.072E-09 | 8.904E-10 | 7.553E-10 | 6.515E-10 |
| WSW | 1.224E-08 | 6.599E-09 | 4.373E-09 | 2.569E-09 | 1.767E-09 | 1.323E-09 | 1.043E-09 | 8.518E-10 | 7.131E-10 | 6.080E-10 | 5.254E-10 |
| W | 1.425E-08 | 8.014E-09 | 5.499E-09 | 3.416E-09 | 2.428E-09 | 1.823E-09 | 1.417E-09 | 1.140E-09 | 9.434E-10 | 7.981E-10 | 6.869E-10 |
| WNW | 1.973E-08 | 1.154E-08 | 8.192E-09 | 5.331E-09 | 3.836E-09 | 2.855E-09 | 2.219E-09 | 1.792E-09 | 1.488E-09 | 1.263E-09 | 1.090E-09 |
| NW | 2.268E-08 | 1.300E-08 | 9.080E-09 | 5.816E-09 | 4.249E-09 | 3.283E-09 | 2.602E-09 | 2.109E-09 | 1.754E-09 | 1.490E-09 | 1.287E-09 |
| NNW | 2.075E-08 | 1.223E-08 | 8.698E-09 | 5.661E-09 | 4.094E-09 | 3.068E-09 | 2.381E-09 | 1.919E-09 | 1.590E-09 | 1.347E-09 | 1.161E-09 |

## Table 2.7-146 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

| X/Q (sec/m$^3$) for Each Segment | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Segment Boundaries in Miles from the Site | | | | | | | | | | |
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.199E-07 | 1.879E-07 | 8.191E-08 | 4.767E-08 | 3.214E-08 | 1.633E-08 | 7.079E-09 | 3.841E-09 | 2.439E-09 | 1.705E-09 |
| NNE | 8.253E-07 | 2.690E-07 | 1.137E-07 | 6.758E-08 | 4.668E-08 | 2.298E-08 | 9.289E-09 | 4.881E-09 | 3.190E-09 | 2.318E-09 |
| NE | 1.047E-06 | 2.970E-07 | 1.173E-07 | 6.892E-08 | 4.744E-08 | 2.485E-08 | 1.128E-08 | 6.492E-09 | 4.496E-09 | 3.411E-09 |
| ENE | 8.434E-07 | 2.481E-07 | 1.022E-07 | 6.129E-08 | 4.272E-08 | 2.282E-08 | 1.066E-08 | 6.275E-09 | 4.416E-09 | 3.393E-09 |
| E | 7.172E-07 | 2.114E-07 | 8.814E-08 | 5.356E-08 | 3.775E-08 | 2.029E-08 | 9.367E-09 | 5.366E-09 | 3.662E-09 | 2.731E-09 |
| ESE | 7.103E-07 | 2.031E-07 | 8.233E-08 | 4.921E-08 | 3.437E-08 | 1.848E-08 | 8.721E-09 | 5.157E-09 | 3.617E-09 | 2.764E-09 |
| SE | 6.003E-07 | 1.742E-07 | 7.132E-08 | 4.282E-08 | 2.995E-08 | 1.615E-08 | 7.662E-09 | 4.564E-09 | 3.229E-09 | 2.488E-09 |
| SSE | 5.740E-07 | 1.666E-07 | 6.817E-08 | 4.067E-08 | 2.827E-08 | 1.573E-08 | 8.453E-09 | 5.825E-09 | 4.519E-09 | 3.589E-09 |
| S | 4.579E-07 | 1.279E-07 | 5.116E-08 | 3.042E-08 | 2.117E-08 | 1.157E-08 | 5.806E-09 | 3.707E-09 | 2.770E-09 | 2.212E-09 |
| SSW | 3.299E-07 | 9.696E-08 | 3.945E-08 | 2.340E-08 | 1.616E-08 | 8.523E-09 | 3.926E-09 | 2.295E-09 | 1.610E-09 | 1.232E-09 |
| SW | 4.017E-07 | 1.427E-07 | 5.745E-08 | 3.173E-08 | 2.055E-08 | 9.498E-09 | 3.506E-09 | 1.719E-09 | 1.076E-09 | 7.569E-10 |
| WSW | 2.890E-07 | 1.007E-07 | 4.016E-08 | 2.219E-08 | 1.454E-08 | 6.864E-09 | 2.614E-09 | 1.329E-09 | 8.535E-10 | 6.085E-10 |
| W | 3.473E-07 | 1.184E-07 | 4.716E-08 | 2.617E-08 | 1.706E-08 | 8.282E-09 | 3.440E-09 | 1.822E-09 | 1.144E-09 | 7.999E-10 |
| WNW | 4.602E-07 | 1.561E-07 | 6.321E-08 | 3.561E-08 | 2.349E-08 | 1.187E-08 | 5.302E-09 | 2.862E-09 | 1.798E-09 | 1.266E-09 |
| NW | 5.182E-07 | 1.777E-07 | 7.215E-08 | 4.062E-08 | 2.689E-08 | 1.341E-08 | 5.845E-09 | 3.268E-09 | 2.115E-09 | 1.493E-09 |
| NNW | 4.217E-07 | 1.489E-07 | 6.303E-08 | 3.622E-08 | 2.437E-08 | 1.255E-08 | 5.640E-09 | 3.067E-09 | 1.926E-09 | 1.350E-09 |

## Table 2.7-147 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.070E-06 | 7.678E-07 | 5.048E-07 | 3.168E-07 | 1.677E-07 | 1.065E-07 | 7.445E-08 | 5.548E-08 | 4.326E-08 | 3.491E-08 | 2.907E-08 |
| NNE | 3.630E-06 | 1.294E-06 | 7.908E-07 | 4.620E-07 | 2.328E-07 | 1.458E-07 | 1.017E-07 | 7.584E-08 | 6.072E-08 | 5.019E-08 | 4.183E-08 |
| NE | 5.244E-06 | 1.739E-06 | 9.819E-07 | 5.312E-07 | 2.425E-07 | 1.465E-07 | 1.015E-07 | 7.605E-08 | 6.005E-08 | 4.917E-08 | 4.137E-08 |
| ENE | 4.087E-06 | 1.387E-06 | 7.940E-07 | 4.361E-07 | 2.057E-07 | 1.274E-07 | 8.978E-08 | 6.816E-08 | 5.433E-08 | 4.484E-08 | 3.797E-08 |
| E | 3.447E-06 | 1.183E-06 | 6.770E-07 | 3.716E-07 | 1.758E-07 | 1.096E-07 | 7.779E-08 | 5.950E-08 | 4.777E-08 | 3.967E-08 | 3.379E-08 |
| ESE | 3.495E-06 | 1.188E-06 | 6.682E-07 | 3.614E-07 | 1.677E-07 | 1.028E-07 | 7.203E-08 | 5.453E-08 | 4.343E-08 | 3.586E-08 | 3.041E-08 |
| SE | 2.907E-06 | 9.967E-07 | 5.659E-07 | 3.084E-07 | 1.444E-07 | 8.907E-08 | 6.265E-08 | 4.757E-08 | 3.796E-08 | 3.138E-08 | 2.663E-08 |
| SSE | 2.843E-06 | 9.541E-07 | 5.382E-07 | 2.932E-07 | 1.379E-07 | 8.513E-08 | 5.972E-08 | 4.517E-08 | 3.591E-08 | 2.958E-08 | 2.502E-08 |
| S | 2.400E-06 | 7.726E-07 | 4.252E-07 | 2.271E-07 | 1.040E-07 | 6.332E-08 | 4.415E-08 | 3.332E-08 | 2.647E-08 | 2.181E-08 | 1.845E-08 |
| SSW | 1.596E-06 | 5.404E-07 | 3.101E-07 | 1.709E-07 | 8.022E-08 | 4.938E-08 | 3.457E-08 | 2.609E-08 | 2.068E-08 | 1.698E-08 | 1.431E-08 |
| SW | 1.413E-06 | 5.763E-07 | 4.023E-07 | 2.525E-07 | 1.270E-07 | 7.680E-08 | 5.168E-08 | 3.733E-08 | 2.838E-08 | 2.240E-08 | 1.821E-08 |
| WSW | 1.041E-06 | 4.188E-07 | 2.886E-07 | 1.794E-07 | 8.895E-08 | 5.354E-08 | 3.598E-08 | 2.600E-08 | 1.979E-08 | 1.564E-08 | 1.288E-08 |
| W | 1.349E-06 | 5.151E-07 | 3.420E-07 | 2.103E-07 | 1.036E-07 | 6.242E-08 | 4.203E-08 | 3.045E-08 | 2.323E-08 | 1.841E-08 | 1.502E-08 |
| WNW | 1.861E-06 | 6.910E-07 | 4.504E-07 | 2.758E-07 | 1.366E-07 | 8.306E-08 | 5.647E-08 | 4.127E-08 | 3.173E-08 | 2.532E-08 | 2.079E-08 |
| NW | 2.034E-06 | 7.713E-07 | 5.096E-07 | 3.134E-07 | 1.559E-07 | 9.487E-08 | 6.445E-08 | 4.706E-08 | 3.615E-08 | 2.883E-08 | 2.379E-08 |
| NNW | 1.720E-06 | 6.237E-07 | 4.101E-07 | 2.554E-07 | 1.317E-07 | 8.212E-08 | 5.674E-08 | 4.193E-08 | 3.251E-08 | 2.612E-08 | 2.179E-08 |

## Table 2.7-147 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 2.472E-08 | 1.433E-08 | 9.997E-09 | 6.219E-09 | 4.263E-09 | 3.115E-09 | 2.377E-09 | 1.870E-09 | 1.515E-09 | 1.257E-09 | 1.063E-09 |
| NNE | 3.562E-08 | 1.980E-08 | 1.337E-08 | 8.024E-09 | 5.578E-09 | 4.205E-09 | 3.337E-09 | 2.744E-09 | 2.306E-09 | 1.979E-09 | 1.721E-09 |
| NE | 3.557E-08 | 2.126E-08 | 1.516E-08 | 9.839E-09 | 7.232E-09 | 5.695E-09 | 4.687E-09 | 3.976E-09 | 3.433E-09 | 3.016E-09 | 2.679E-09 |
| ENE | 3.281E-08 | 2.001E-08 | 1.446E-08 | 9.573E-09 | 7.140E-09 | 5.691E-09 | 4.732E-09 | 4.051E-09 | 3.526E-09 | 3.121E-09 | 2.794E-09 |
| E | 2.936E-08 | 1.795E-08 | 1.295E-08 | 8.477E-09 | 6.230E-09 | 4.883E-09 | 3.991E-09 | 3.358E-09 | 2.874E-09 | 2.505E-09 | 2.209E-09 |
| ESE | 2.635E-08 | 1.613E-08 | 1.172E-08 | 7.811E-09 | 5.845E-09 | 4.659E-09 | 3.868E-09 | 3.302E-09 | 2.865E-09 | 2.529E-09 | 2.258E-09 |
| SE | 2.308E-08 | 1.418E-08 | 1.033E-08 | 6.912E-09 | 5.195E-09 | 4.163E-09 | 3.475E-09 | 2.983E-09 | 2.603E-09 | 2.310E-09 | 2.073E-09 |
| SSE | 2.161E-08 | 1.378E-08 | 1.049E-08 | 7.730E-09 | 6.349E-09 | 5.419E-09 | 4.638E-09 | 4.009E-09 | 3.487E-09 | 3.047E-09 | 2.674E-09 |
| S | 1.594E-08 | 9.967E-09 | 7.411E-09 | 5.182E-09 | 4.061E-09 | 3.379E-09 | 2.908E-09 | 2.533E-09 | 2.216E-09 | 1.957E-09 | 1.743E-09 |
| SSW | 1.231E-08 | 7.428E-09 | 5.334E-09 | 3.504E-09 | 2.604E-09 | 2.072E-09 | 1.718E-09 | 1.463E-09 | 1.261E-09 | 1.098E-09 | 9.656E-10 |
| SW | 1.517E-08 | 7.907E-09 | 5.093E-09 | 2.856E-09 | 1.892E-09 | 1.373E-09 | 1.055E-09 | 8.406E-10 | 6.880E-10 | 5.748E-10 | 4.879E-10 |
| WSW | 1.085E-08 | 5.727E-09 | 3.739E-09 | 2.150E-09 | 1.450E-09 | 1.059E-09 | 8.133E-10 | 6.474E-10 | 5.293E-10 | 4.420E-10 | 3.753E-10 |
| W | 1.256E-08 | 6.962E-09 | 4.728E-09 | 2.848E-09 | 1.936E-09 | 1.409E-09 | 1.066E-09 | 8.366E-10 | 6.771E-10 | 5.614E-10 | 4.742E-10 |
| WNW | 1.748E-08 | 1.014E-08 | 7.153E-09 | 4.502E-09 | 3.096E-09 | 2.232E-09 | 1.687E-09 | 1.329E-09 | 1.079E-09 | 8.976E-10 | 7.604E-10 |
| NW | 2.008E-08 | 1.138E-08 | 7.897E-09 | 4.949E-09 | 3.456E-09 | 2.565E-09 | 1.978E-09 | 1.565E-09 | 1.272E-09 | 1.059E-09 | 8.972E-10 |
| NNW | 1.857E-08 | 1.087E-08 | 7.702E-09 | 4.877E-09 | 3.360E-09 | 2.437E-09 | 1.840E-09 | 1.447E-09 | 1.174E-09 | 9.753E-10 | 8.254E-10 |

## Table 2.7-147 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

X/Q (sec/$m^3$) for Each Segment

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 4.797E-07 | 1.736E-07 | 7.539E-08 | 4.357E-08 | 2.919E-08 | 1.471E-08 | 6.189E-09 | 3.126E-09 | 1.880E-09 | 1.262E-09 |
| NNE | 7.564E-07 | 2.451E-07 | 1.031E-07 | 6.103E-08 | 4.201E-08 | 2.046E-08 | 8.125E-09 | 4.224E-09 | 2.746E-09 | 1.980E-09 |
| NE | 9.498E-07 | 2.640E-07 | 1.033E-07 | 6.048E-08 | 4.153E-08 | 2.173E-08 | 9.862E-09 | 5.702E-09 | 3.972E-09 | 3.015E-09 |
| ENE | 7.667E-07 | 2.221E-07 | 9.117E-08 | 5.467E-08 | 3.809E-08 | 2.039E-08 | 9.578E-09 | 5.694E-09 | 4.045E-09 | 3.120E-09 |
| E | 6.537E-07 | 1.899E-07 | 7.896E-08 | 4.803E-08 | 3.389E-08 | 1.826E-08 | 8.472E-09 | 4.885E-09 | 3.354E-09 | 2.505E-09 |
| ESE | 6.474E-07 | 1.819E-07 | 7.325E-08 | 4.372E-08 | 3.052E-08 | 1.644E-08 | 7.805E-09 | 4.659E-09 | 3.297E-09 | 2.528E-09 |
| SE | 5.472E-07 | 1.562E-07 | 6.366E-08 | 3.820E-08 | 2.672E-08 | 1.444E-08 | 6.908E-09 | 4.163E-09 | 2.979E-09 | 2.309E-09 |
| SSE | 5.217E-07 | 1.490E-07 | 6.068E-08 | 3.615E-08 | 2.511E-08 | 1.406E-08 | 7.731E-09 | 5.355E-09 | 3.990E-09 | 3.039E-09 |
| S | 4.144E-07 | 1.133E-07 | 4.493E-08 | 2.665E-08 | 1.852E-08 | 1.016E-08 | 5.179E-09 | 3.372E-09 | 2.519E-09 | 1.955E-09 |
| SSW | 2.994E-07 | 8.666E-08 | 3.513E-08 | 2.081E-08 | 1.436E-08 | 7.582E-09 | 3.511E-09 | 2.072E-09 | 1.459E-09 | 1.097E-09 |
| SW | 3.744E-07 | 1.326E-07 | 5.264E-08 | 2.866E-08 | 1.833E-08 | 8.269E-09 | 2.925E-09 | 1.384E-09 | 8.436E-10 | 5.762E-10 |
| WSW | 2.690E-07 | 9.331E-08 | 3.667E-08 | 1.998E-08 | 1.294E-08 | 5.981E-09 | 2.192E-09 | 1.065E-09 | 6.498E-10 | 4.432E-10 |
| W | 3.219E-07 | 1.090E-07 | 4.284E-08 | 2.345E-08 | 1.511E-08 | 7.213E-09 | 2.861E-09 | 1.412E-09 | 8.414E-10 | 5.634E-10 |
| WNW | 4.263E-07 | 1.437E-07 | 5.748E-08 | 3.201E-08 | 2.091E-08 | 1.044E-08 | 4.466E-09 | 2.245E-09 | 1.336E-09 | 9.007E-10 |
| NW | 4.806E-07 | 1.638E-07 | 6.561E-08 | 3.648E-08 | 2.391E-08 | 1.176E-08 | 4.941E-09 | 2.568E-09 | 1.571E-09 | 1.062E-09 |
| NNW | 3.888E-07 | 1.372E-07 | 5.758E-08 | 3.277E-08 | 2.188E-08 | 1.117E-08 | 4.830E-09 | 2.444E-09 | 1.456E-09 | 9.787E-10 |

## Table 2.7-148 Annual Average D/Q Values for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.669E-08 | 1.250E-08 | 7.768E-09 | 4.236E-09 | 1.748E-09 | 9.373E-10 | 5.808E-10 | 3.948E-10 | 2.855E-10 | 2.159E-10 | 1.689E-10 |
| NNE | 4.999E-08 | 2.240E-08 | 1.322E-08 | 6.947E-09 | 2.776E-09 | 1.460E-09 | 8.932E-10 | 6.019E-10 | 4.329E-10 | 3.263E-10 | 2.548E-10 |
| NE | 5.748E-08 | 2.242E-08 | 1.213E-08 | 5.990E-09 | 2.246E-09 | 1.145E-09 | 6.876E-10 | 4.572E-10 | 3.257E-10 | 2.439E-10 | 1.895E-10 |
| ENE | 4.317E-08 | 1.732E-08 | 9.486E-09 | 4.725E-09 | 1.786E-09 | 9.153E-10 | 5.514E-10 | 3.676E-10 | 2.624E-10 | 1.968E-10 | 1.531E-10 |
| E | 3.717E-08 | 1.551E-08 | 8.514E-09 | 4.241E-09 | 1.601E-09 | 8.225E-10 | 4.967E-10 | 3.319E-10 | 2.374E-10 | 1.783E-10 | 1.390E-10 |
| ESE | 3.642E-08 | 1.529E-08 | 8.365E-09 | 4.155E-09 | 1.564E-09 | 8.025E-10 | 4.841E-10 | 3.232E-10 | 2.311E-10 | 1.736E-10 | 1.353E-10 |
| SE | 3.065E-08 | 1.282E-08 | 7.013E-09 | 3.489E-09 | 1.318E-09 | 6.771E-10 | 4.089E-10 | 2.732E-10 | 1.954E-10 | 1.468E-10 | 1.144E-10 |
| SSE | 2.763E-08 | 1.114E-08 | 6.084E-09 | 3.023E-09 | 1.140E-09 | 5.839E-10 | 3.517E-10 | 2.345E-10 | 1.674E-10 | 1.255E-10 | 9.771E-11 |
| S | 2.188E-08 | 8.274E-09 | 4.447E-09 | 2.185E-09 | 8.135E-10 | 4.128E-10 | 2.470E-10 | 1.638E-10 | 1.164E-10 | 8.701E-11 | 6.752E-11 |
| SSW | 1.761E-08 | 6.746E-09 | 3.618E-09 | 1.775E-09 | 6.588E-10 | 3.350E-10 | 2.008E-10 | 1.334E-10 | 9.501E-11 | 7.109E-11 | 5.522E-11 |
| SW | 3.097E-08 | 1.552E-08 | 9.773E-09 | 5.325E-09 | 2.202E-09 | 1.170E-09 | 7.187E-10 | 4.857E-10 | 3.500E-10 | 2.642E-10 | 2.065E-10 |
| WSW | 2.014E-08 | 1.011E-08 | 6.374E-09 | 3.467E-09 | 1.429E-09 | 7.570E-10 | 4.643E-10 | 3.134E-10 | 2.256E-10 | 1.702E-10 | 1.331E-10 |
| W | 2.469E-08 | 1.160E-08 | 6.975E-09 | 3.895E-09 | 1.570E-09 | 8.213E-10 | 4.998E-10 | 3.356E-10 | 2.408E-10 | 1.813E-10 | 1.415E-10 |
| WNW | 3.070E-08 | 1.451E-08 | 8.634E-09 | 4.794E-09 | 1.924E-09 | 1.006E-09 | 6.126E-10 | 4.114E-10 | 2.953E-10 | 2.224E-10 | 1.736E-10 |
| NW | 2.965E-08 | 1.457E-08 | 8.994E-09 | 5.157E-09 | 2.103E-09 | 1.105E-09 | 6.742E-10 | 4.534E-10 | 3.257E-10 | 2.454E-10 | 1.916E-10 |
| NNW | 2.115E-08 | 9.980E-09 | 6.314E-09 | 3.473E-09 | 1.448E-09 | 7.750E-10 | 4.790E-10 | 3.248E-10 | 2.346E-10 | 1.772E-10 | 1.385E-10 |

## Table 2.7-148 Annual Average D/Q Values for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 1.357E-10 | 6.352E-11 | 4.010E-11 | 4.356E-11 | 2.986E-11 | 1.816E-11 | 1.357E-11 | 1.028E-11 | 8.012E-12 | 6.410E-12 | 5.233E-12 |
| NNE | 2.045E-10 | 9.317E-11 | 5.640E-11 | 2.884E-11 | 1.814E-11 | 1.283E-11 | 1.001E-11 | 8.053E-12 | 7.489E-12 | 6.328E-12 | 6.459E-12 |
| NE | 1.516E-10 | 6.868E-11 | 4.164E-11 | 2.157E-11 | 1.362E-11 | 9.711E-12 | 7.568E-12 | 6.599E-12 | 5.657E-12 | 5.805E-12 | 6.680E-12 |
| ENE | 1.226E-10 | 5.569E-11 | 3.376E-11 | 1.753E-11 | 1.113E-11 | 8.002E-12 | 6.312E-12 | 5.473E-12 | 4.768E-12 | 4.790E-12 | 5.176E-12 |
| E | 1.115E-10 | 5.092E-11 | 3.098E-11 | 1.625E-11 | 1.038E-11 | 7.565E-12 | 6.007E-12 | 5.051E-12 | 4.419E-12 | 3.931E-12 | 3.596E-12 |
| ESE | 1.085E-10 | 4.959E-11 | 3.019E-11 | 1.587E-11 | 1.016E-11 | 7.413E-12 | 5.895E-12 | 4.959E-12 | 4.342E-12 | 3.865E-12 | 3.525E-12 |
| SE | 9.179E-11 | 4.192E-11 | 2.551E-11 | 1.339E-11 | 8.563E-12 | 6.240E-12 | 4.931E-12 | 4.145E-12 | 3.632E-12 | 3.236E-12 | 3.012E-12 |
| SSE | 7.827E-11 | 3.559E-11 | 2.169E-11 | 1.173E-11 | 1.270E-11 | 2.390E-11 | 1.990E-11 | 1.464E-11 | 1.080E-11 | 7.381E-12 | 5.786E-12 |
| S | 5.396E-11 | 2.435E-11 | 1.475E-11 | 7.612E-12 | 5.163E-12 | 4.527E-12 | 7.056E-12 | 9.753E-12 | 8.461E-12 | 6.698E-12 | 5.353E-12 |
| SSW | 4.417E-11 | 2.003E-11 | 1.218E-11 | 6.334E-12 | 4.298E-12 | 3.942E-12 | 4.383E-12 | 4.907E-12 | 5.502E-12 | 4.801E-12 | 3.977E-12 |
| SW | 1.659E-10 | 7.547E-11 | 4.529E-11 | 2.292E-11 | 1.442E-11 | 1.040E-11 | 8.230E-12 | 7.013E-12 | 6.102E-12 | 5.171E-12 | 4.325E-12 |
| WSW | 1.085E-10 | 4.906E-11 | 2.921E-11 | 1.642E-11 | 1.185E-11 | 9.409E-12 | 7.045E-12 | 5.357E-12 | 4.267E-12 | 3.488E-12 | 2.918E-12 |
| W | 1.136E-10 | 5.180E-11 | 3.578E-11 | 2.629E-11 | 1.642E-11 | 1.135E-11 | 8.465E-12 | 6.365E-12 | 4.954E-12 | 3.961E-12 | 3.233E-12 |
| WNW | 1.395E-10 | 6.369E-11 | 5.202E-11 | 3.526E-11 | 2.220E-11 | 1.527E-11 | 1.104E-11 | 8.315E-12 | 6.471E-12 | 5.169E-12 | 4.221E-12 |
| NW | 1.539E-10 | 7.006E-11 | 4.687E-11 | 3.841E-11 | 2.552E-11 | 1.693E-11 | 1.209E-11 | 9.336E-12 | 7.304E-12 | 5.850E-12 | 4.780E-12 |
| NNW | 1.143E-10 | 5.192E-11 | 4.356E-11 | 3.328E-11 | 2.045E-11 | 1.405E-11 | 1.014E-11 | 7.637E-12 | 5.951E-12 | 4.760E-12 | 3.885E-12 |

## Table 2.7-148 Annual Average D/Q Values for Mixed-Mode Release from the Reactor Building/Fuel Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 7.250E-09 | 1.941E-09 | 6.015E-10 | 2.902E-10 | 1.705E-10 | 6.915E-11 | 3.670E-11 | 1.945E-11 | 1.036E-11 | 6.449E-12 |
| NNE | 1.247E-08 | 3.118E-09 | 9.278E-10 | 4.406E-10 | 2.573E-10 | 1.016E-10 | 3.021E-11 | 1.312E-11 | 8.398E-12 | 6.720E-12 |
| NE | 1.169E-08 | 2.589E-09 | 7.174E-10 | 3.321E-10 | 1.916E-10 | 7.509E-11 | 2.249E-11 | 9.896E-12 | 6.517E-12 | 6.085E-12 |
| ENE | 9.110E-09 | 2.052E-09 | 5.749E-10 | 2.674E-10 | 1.547E-10 | 6.082E-11 | 1.829E-11 | 8.160E-12 | 5.444E-12 | 4.927E-12 |
| E | 8.170E-09 | 1.842E-09 | 5.176E-10 | 2.419E-10 | 1.404E-10 | 5.551E-11 | 1.692E-11 | 7.693E-12 | 5.083E-12 | 3.952E-12 |
| ESE | 8.032E-09 | 1.801E-09 | 5.047E-10 | 2.355E-10 | 1.367E-10 | 5.407E-11 | 1.651E-11 | 7.538E-12 | 4.991E-12 | 3.880E-12 |
| SE | 6.736E-09 | 1.515E-09 | 4.262E-10 | 1.991E-10 | 1.156E-10 | 4.571E-11 | 1.394E-11 | 6.336E-12 | 4.174E-12 | 3.270E-12 |
| SSE | 5.847E-09 | 1.311E-09 | 3.667E-10 | 1.706E-10 | 9.876E-11 | 3.890E-11 | 1.437E-11 | 1.931E-11 | 1.468E-11 | 7.804E-12 |
| S | 4.292E-09 | 9.401E-10 | 2.579E-10 | 1.187E-10 | 6.827E-11 | 2.666E-11 | 8.110E-12 | 5.708E-12 | 8.490E-12 | 6.722E-12 |
| SSW | 3.494E-09 | 7.628E-10 | 2.096E-10 | 9.688E-11 | 5.583E-11 | 2.190E-11 | 6.728E-12 | 4.214E-12 | 4.984E-12 | 4.703E-12 |
| SW | 9.074E-09 | 2.437E-09 | 7.457E-10 | 3.561E-10 | 2.086E-10 | 8.216E-11 | 2.412E-11 | 1.061E-11 | 7.014E-12 | 5.134E-12 |
| WSW | 5.913E-09 | 1.583E-09 | 4.819E-10 | 2.296E-10 | 1.350E-10 | 5.346E-11 | 1.723E-11 | 9.115E-12 | 5.424E-12 | 3.508E-12 |
| W | 6.635E-09 | 1.754E-09 | 5.199E-10 | 2.452E-10 | 1.429E-10 | 5.841E-11 | 2.401E-11 | 1.155E-11 | 6.427E-12 | 3.986E-12 |
| WNW | 8.233E-09 | 2.154E-09 | 6.371E-10 | 3.007E-10 | 1.754E-10 | 7.534E-11 | 3.318E-11 | 1.543E-11 | 8.393E-12 | 5.204E-12 |
| NW | 8.527E-09 | 2.338E-09 | 7.008E-10 | 3.316E-10 | 1.936E-10 | 7.839E-11 | 3.456E-11 | 1.729E-11 | 9.349E-12 | 5.885E-12 |
| NNW | 5.866E-09 | 1.599E-09 | 4.963E-10 | 2.385E-10 | 1.410E-10 | 6.206E-11 | 2.986E-11 | 1.419E-11 | 7.710E-12 | 4.789E-12 |

## Table 2.7-149 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.685E-06 | 9.507E-07 | 5.689E-07 | 3.271E-07 | 1.618E-07 | 1.014E-07 | 7.097E-08 | 5.315E-08 | 4.169E-08 | 3.384E-08 | 2.831E-08 |
| NNE | 4.793E-06 | 1.652E-06 | 9.517E-07 | 5.226E-07 | 2.445E-07 | 1.492E-07 | 1.031E-07 | 7.675E-08 | 6.104E-08 | 5.025E-08 | 4.197E-08 |
| NE | 7.155E-06 | 2.341E-06 | 1.292E-06 | 6.831E-07 | 2.952E-07 | 1.713E-07 | 1.152E-07 | 8.451E-08 | 6.571E-08 | 5.321E-08 | 4.441E-08 |
| ENE | 5.722E-06 | 1.895E-06 | 1.053E-06 | 5.581E-07 | 2.443E-07 | 1.438E-07 | 9.777E-08 | 7.243E-08 | 5.675E-08 | 4.624E-08 | 3.879E-08 |
| E | 4.888E-06 | 1.623E-06 | 8.990E-07 | 4.765E-07 | 2.088E-07 | 1.232E-07 | 8.406E-08 | 6.249E-08 | 4.913E-08 | 4.018E-08 | 3.382E-08 |
| ESE | 4.934E-06 | 1.629E-06 | 8.913E-07 | 4.674E-07 | 2.026E-07 | 1.189E-07 | 8.059E-08 | 5.956E-08 | 4.658E-08 | 3.792E-08 | 3.179E-08 |
| SE | 4.034E-06 | 1.343E-06 | 7.417E-07 | 3.911E-07 | 1.705E-07 | 1.003E-07 | 6.817E-08 | 5.049E-08 | 3.957E-08 | 3.226E-08 | 2.708E-08 |
| SSE | 3.980E-06 | 1.309E-06 | 7.195E-07 | 3.778E-07 | 1.647E-07 | 9.712E-08 | 6.607E-08 | 4.892E-08 | 3.829E-08 | 3.116E-08 | 2.611E-08 |
| S | 3.320E-06 | 1.063E-06 | 5.754E-07 | 2.999E-07 | 1.290E-07 | 7.528E-08 | 5.086E-08 | 3.749E-08 | 2.927E-08 | 2.379E-08 | 1.991E-08 |
| SSW | 2.171E-06 | 7.236E-07 | 4.060E-07 | 2.154E-07 | 9.393E-08 | 5.500E-08 | 3.727E-08 | 2.752E-08 | 2.150E-08 | 1.747E-08 | 1.462E-08 |
| SW | 1.645E-06 | 6.291E-07 | 3.935E-07 | 2.337E-07 | 1.167E-07 | 7.188E-08 | 4.931E-08 | 3.624E-08 | 2.795E-08 | 2.235E-08 | 1.838E-08 |
| WSW | 1.237E-06 | 4.642E-07 | 2.869E-07 | 1.689E-07 | 8.304E-08 | 5.082E-08 | 3.476E-08 | 2.552E-08 | 1.968E-08 | 1.574E-08 | 1.307E-08 |
| W | 1.691E-06 | 6.100E-07 | 3.685E-07 | 2.124E-07 | 1.019E-07 | 6.171E-08 | 4.200E-08 | 3.076E-08 | 2.369E-08 | 1.895E-08 | 1.559E-08 |
| WNW | 2.317E-06 | 8.164E-07 | 4.858E-07 | 2.788E-07 | 1.337E-07 | 8.149E-08 | 5.583E-08 | 4.114E-08 | 3.188E-08 | 2.563E-08 | 2.119E-08 |
| NW | 2.543E-06 | 9.051E-07 | 5.422E-07 | 3.134E-07 | 1.515E-07 | 9.261E-08 | 6.349E-08 | 4.678E-08 | 3.623E-08 | 2.911E-08 | 2.414E-08 |
| NNW | 2.247E-06 | 7.769E-07 | 4.599E-07 | 2.644E-07 | 1.295E-07 | 8.037E-08 | 5.577E-08 | 4.149E-08 | 3.238E-08 | 2.618E-08 | 2.191E-08 |

## Table 2.7-149 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance in Miles from the Site | | | | | | | | | | | |
| Sector | 5 | 7.5 | 10 | 15.0 | 20 | 25.0 | 30 | 35.0 | 40 | 45.0 | 50 |
| N | 2.418E-08 | 1.415E-08 | 9.930E-09 | 6.340E-09 | 4.633E-09 | 3.619E-09 | 2.925E-09 | 2.405E-09 | 2.012E-09 | 1.717E-09 | 1.491E-09 |
| NNE | 3.581E-08 | 2.020E-08 | 1.381E-08 | 8.440E-09 | 5.952E-09 | 4.538E-09 | 3.637E-09 | 3.018E-09 | 2.570E-09 | 2.231E-09 | 1.967E-09 |
| NE | 3.794E-08 | 2.216E-08 | 1.567E-08 | 1.012E-08 | 7.432E-09 | 5.858E-09 | 4.829E-09 | 4.107E-09 | 3.573E-09 | 3.163E-09 | 2.839E-09 |
| ENE | 3.329E-08 | 1.977E-08 | 1.413E-08 | 9.259E-09 | 6.878E-09 | 5.471E-09 | 4.547E-09 | 3.896E-09 | 3.413E-09 | 3.041E-09 | 2.746E-09 |
| E | 2.913E-08 | 1.737E-08 | 1.241E-08 | 8.090E-09 | 5.957E-09 | 4.687E-09 | 3.848E-09 | 3.254E-09 | 2.812E-09 | 2.472E-09 | 2.202E-09 |
| ESE | 2.728E-08 | 1.616E-08 | 1.154E-08 | 7.559E-09 | 5.614E-09 | 4.461E-09 | 3.699E-09 | 3.159E-09 | 2.757E-09 | 2.447E-09 | 2.200E-09 |
| SE | 2.327E-08 | 1.386E-08 | 9.941E-09 | 6.551E-09 | 4.890E-09 | 3.904E-09 | 3.254E-09 | 2.794E-09 | 2.452E-09 | 2.188E-09 | 1.978E-09 |
| SSE | 2.238E-08 | 1.355E-08 | 9.934E-09 | 6.941E-09 | 5.552E-09 | 4.762E-09 | 4.248E-09 | 3.870E-09 | 3.564E-09 | 3.294E-09 | 3.043E-09 |
| S | 1.706E-08 | 1.020E-08 | 7.383E-09 | 4.988E-09 | 3.832E-09 | 3.154E-09 | 2.711E-09 | 2.397E-09 | 2.162E-09 | 1.977E-09 | 1.825E-09 |
| SSW | 1.252E-08 | 7.394E-09 | 5.266E-09 | 3.435E-09 | 2.548E-09 | 2.027E-09 | 1.687E-09 | 1.447E-09 | 1.270E-09 | 1.133E-09 | 1.025E-09 |
| SW | 1.546E-08 | 8.361E-09 | 5.530E-09 | 3.221E-09 | 2.196E-09 | 1.631E-09 | 1.279E-09 | 1.043E-09 | 8.738E-10 | 7.480E-10 | 6.513E-10 |
| WSW | 1.109E-08 | 6.041E-09 | 4.027E-09 | 2.384E-09 | 1.653E-09 | 1.247E-09 | 9.934E-10 | 8.208E-10 | 6.962E-10 | 6.020E-10 | 5.281E-10 |
| W | 1.313E-08 | 7.383E-09 | 5.059E-09 | 3.153E-09 | 2.282E-09 | 1.767E-09 | 1.409E-09 | 1.148E-09 | 9.586E-10 | 8.183E-10 | 7.107E-10 |
| WNW | 1.792E-08 | 1.039E-08 | 7.324E-09 | 4.794E-09 | 3.574E-09 | 2.773E-09 | 2.188E-09 | 1.782E-09 | 1.494E-09 | 1.279E-09 | 1.113E-09 |
| NW | 2.047E-08 | 1.166E-08 | 8.092E-09 | 5.169E-09 | 3.828E-09 | 3.038E-09 | 2.492E-09 | 2.074E-09 | 1.745E-09 | 1.495E-09 | 1.302E-09 |
| NNW | 1.872E-08 | 1.095E-08 | 7.744E-09 | 5.068E-09 | 3.775E-09 | 2.952E-09 | 2.344E-09 | 1.907E-09 | 1.596E-09 | 1.364E-09 | 1.186E-09 |

## Table 2.7-149 Annual Average X/Q Values (No Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

| | X/Q (sec/m$^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.463E-07 | 1.717E-07 | 7.195E-08 | 4.198E-08 | 2.842E-08 | 1.450E-08 | 6.379E-09 | 3.612E-09 | 2.404E-09 | 1.721E-09 |
| NNE | 9.165E-07 | 2.639E-07 | 1.049E-07 | 6.142E-08 | 4.214E-08 | 2.083E-08 | 8.527E-09 | 4.555E-09 | 3.024E-09 | 2.234E-09 |
| NE | 1.255E-06 | 3.263E-07 | 1.179E-07 | 6.632E-08 | 4.462E-08 | 2.278E-08 | 1.016E-08 | 5.866E-09 | 4.110E-09 | 3.165E-09 |
| ENE | 1.020E-06 | 2.693E-07 | 9.990E-08 | 5.723E-08 | 3.896E-08 | 2.027E-08 | 9.284E-09 | 5.476E-09 | 3.898E-09 | 3.042E-09 |
| E | 8.722E-07 | 2.303E-07 | 8.588E-08 | 4.954E-08 | 3.397E-08 | 1.778E-08 | 8.103E-09 | 4.690E-09 | 3.255E-09 | 2.473E-09 |
| ESE | 8.667E-07 | 2.242E-07 | 8.238E-08 | 4.699E-08 | 3.194E-08 | 1.658E-08 | 7.579E-09 | 4.463E-09 | 3.160E-09 | 2.448E-09 |
| SE | 7.195E-07 | 1.883E-07 | 6.966E-08 | 3.990E-08 | 2.720E-08 | 1.421E-08 | 6.566E-09 | 3.907E-09 | 2.795E-09 | 2.188E-09 |
| SSE | 6.986E-07 | 1.820E-07 | 6.749E-08 | 3.861E-08 | 2.623E-08 | 1.391E-08 | 6.989E-09 | 4.767E-09 | 3.861E-09 | 3.281E-09 |
| S | 5.613E-07 | 1.431E-07 | 5.202E-08 | 2.953E-08 | 2.001E-08 | 1.047E-08 | 5.006E-09 | 3.157E-09 | 2.397E-09 | 1.975E-09 |
| SSW | 3.919E-07 | 1.036E-07 | 3.810E-08 | 2.169E-08 | 1.469E-08 | 7.586E-09 | 3.448E-09 | 2.030E-09 | 1.448E-09 | 1.134E-09 |
| SW | 3.749E-07 | 1.228E-07 | 5.010E-08 | 2.819E-08 | 1.847E-08 | 8.680E-09 | 3.279E-09 | 1.641E-09 | 1.046E-09 | 7.495E-10 |
| WSW | 2.739E-07 | 8.781E-08 | 3.535E-08 | 1.985E-08 | 1.313E-08 | 6.268E-09 | 2.424E-09 | 1.254E-09 | 8.227E-10 | 6.025E-10 |
| W | 3.528E-07 | 1.086E-07 | 4.276E-08 | 2.390E-08 | 1.568E-08 | 7.628E-09 | 3.189E-09 | 1.761E-09 | 1.150E-09 | 8.200E-10 |
| WNW | 4.673E-07 | 1.428E-07 | 5.680E-08 | 3.215E-08 | 2.129E-08 | 1.070E-08 | 4.814E-09 | 2.752E-09 | 1.788E-09 | 1.281E-09 |
| NW | 5.211E-07 | 1.613E-07 | 6.457E-08 | 3.653E-08 | 2.425E-08 | 1.203E-08 | 5.222E-09 | 3.030E-09 | 2.068E-09 | 1.497E-09 |
| NNW | 4.435E-07 | 1.377E-07 | 5.662E-08 | 3.262E-08 | 2.199E-08 | 1.125E-08 | 5.088E-09 | 2.928E-09 | 1.913E-09 | 1.367E-09 |

## Table 2.7-150 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Distance in Miles from the Site | | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.684E-06 | 9.499E-07 | 5.682E-07 | 3.265E-07 | 1.614E-07 | 1.011E-07 | 7.071E-08 | 5.291E-08 | 4.147E-08 | 3.364E-08 | 2.812E-08 |
| NNE | 4.791E-06 | 1.650E-06 | 9.507E-07 | 5.218E-07 | 2.440E-07 | 1.488E-07 | 1.028E-07 | 7.643E-08 | 6.074E-08 | 4.997E-08 | 4.170E-08 |
| NE | 7.152E-06 | 2.340E-06 | 1.291E-06 | 6.821E-07 | 2.946E-07 | 1.708E-07 | 1.147E-07 | 8.414E-08 | 6.537E-08 | 5.290E-08 | 4.411E-08 |
| ENE | 5.719E-06 | 1.894E-06 | 1.052E-06 | 5.571E-07 | 2.436E-07 | 1.433E-07 | 9.737E-08 | 7.208E-08 | 5.643E-08 | 4.595E-08 | 3.851E-08 |
| E | 4.885E-06 | 1.622E-06 | 8.978E-07 | 4.756E-07 | 2.082E-07 | 1.228E-07 | 8.369E-08 | 6.216E-08 | 4.883E-08 | 3.990E-08 | 3.356E-08 |
| ESE | 4.932E-06 | 1.627E-06 | 8.900E-07 | 4.666E-07 | 2.021E-07 | 1.184E-07 | 8.023E-08 | 5.924E-08 | 4.630E-08 | 3.765E-08 | 3.154E-08 |
| SE | 4.032E-06 | 1.342E-06 | 7.407E-07 | 3.904E-07 | 1.701E-07 | 9.993E-08 | 6.787E-08 | 5.023E-08 | 3.933E-08 | 3.204E-08 | 2.687E-08 |
| SSE | 3.978E-06 | 1.308E-06 | 7.186E-07 | 3.772E-07 | 1.643E-07 | 9.679E-08 | 6.580E-08 | 4.867E-08 | 3.807E-08 | 3.096E-08 | 2.591E-08 |
| S | 3.319E-06 | 1.062E-06 | 5.746E-07 | 2.994E-07 | 1.287E-07 | 7.503E-08 | 5.065E-08 | 3.731E-08 | 2.910E-08 | 2.364E-08 | 1.977E-08 |
| SSW | 2.171E-06 | 7.230E-07 | 4.055E-07 | 2.151E-07 | 9.372E-08 | 5.484E-08 | 3.713E-08 | 2.740E-08 | 2.139E-08 | 1.737E-08 | 1.452E-08 |
| SW | 1.644E-06 | 6.287E-07 | 3.932E-07 | 2.334E-07 | 1.165E-07 | 7.171E-08 | 4.916E-08 | 3.611E-08 | 2.783E-08 | 2.224E-08 | 1.828E-08 |
| WSW | 1.237E-06 | 4.639E-07 | 2.866E-07 | 1.687E-07 | 8.289E-08 | 5.070E-08 | 3.466E-08 | 2.543E-08 | 1.960E-08 | 1.566E-08 | 1.300E-08 |
| W | 1.690E-06 | 6.096E-07 | 3.681E-07 | 2.122E-07 | 1.017E-07 | 6.156E-08 | 4.187E-08 | 3.064E-08 | 2.359E-08 | 1.885E-08 | 1.550E-08 |
| WNW | 2.316E-06 | 8.158E-07 | 4.852E-07 | 2.785E-07 | 1.334E-07 | 8.127E-08 | 5.564E-08 | 4.097E-08 | 3.172E-08 | 2.548E-08 | 2.105E-08 |
| NW | 2.542E-06 | 9.044E-07 | 5.416E-07 | 3.129E-07 | 1.512E-07 | 9.235E-08 | 6.327E-08 | 4.658E-08 | 3.605E-08 | 2.895E-08 | 2.399E-08 |
| NNW | 2.246E-06 | 7.764E-07 | 4.594E-07 | 2.640E-07 | 1.292E-07 | 8.014E-08 | 5.558E-08 | 4.132E-08 | 3.222E-08 | 2.603E-08 | 2.177E-08 |

## Table 2.7-150 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

| | Annual Average X/Q ($sec/m^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| Sector | 5 | 7.5 | 10 | 15.0 | 20 | 25.0 | 30 | 35.0 | 40 | 45.0 | 50 |
| N | 2.400E-08 | 1.398E-08 | 9.770E-09 | 6.182E-09 | 4.476E-09 | 3.464E-09 | 2.774E-09 | 2.261E-09 | 1.874E-09 | 1.586E-09 | 1.365E-09 |
| NNE | 3.556E-08 | 1.998E-08 | 1.361E-08 | 8.256E-09 | 5.778E-09 | 4.372E-09 | 3.477E-09 | 2.864E-09 | 2.420E-09 | 2.085E-09 | 1.824E-09 |
| NE | 3.766E-08 | 2.192E-08 | 1.544E-08 | 9.894E-09 | 7.215E-09 | 5.644E-09 | 4.618E-09 | 3.898E-09 | 3.366E-09 | 2.958E-09 | 2.635E-09 |
| ENE | 3.302E-08 | 1.954E-08 | 1.391E-08 | 9.043E-09 | 6.664E-09 | 5.260E-09 | 4.337E-09 | 3.687E-09 | 3.204E-09 | 2.833E-09 | 2.538E-09 |
| E | 2.887E-08 | 1.714E-08 | 1.220E-08 | 7.883E-09 | 5.754E-09 | 4.487E-09 | 3.652E-09 | 3.061E-09 | 2.622E-09 | 2.285E-09 | 2.017E-09 |
| ESE | 2.705E-08 | 1.595E-08 | 1.134E-08 | 7.362E-09 | 5.420E-09 | 4.268E-09 | 3.507E-09 | 2.969E-09 | 2.569E-09 | 2.260E-09 | 2.015E-09 |
| SE | 2.307E-08 | 1.369E-08 | 9.772E-09 | 6.384E-09 | 4.723E-09 | 3.738E-09 | 3.088E-09 | 2.628E-09 | 2.286E-09 | 2.021E-09 | 1.811E-09 |
| SSE | 2.220E-08 | 1.338E-08 | 9.771E-09 | 6.771E-09 | 5.370E-09 | 4.566E-09 | 4.035E-09 | 3.643E-09 | 3.323E-09 | 3.042E-09 | 2.783E-09 |
| S | 1.693E-08 | 1.008E-08 | 7.266E-09 | 4.869E-09 | 3.709E-09 | 3.027E-09 | 2.579E-09 | 2.261E-09 | 2.021E-09 | 1.831E-09 | 1.675E-09 |
| SSW | 1.242E-08 | 7.312E-09 | 5.187E-09 | 3.358E-09 | 2.471E-09 | 1.950E-09 | 1.609E-09 | 1.369E-09 | 1.192E-09 | 1.054E-09 | 9.448E-10 |
| SW | 1.536E-08 | 8.281E-09 | 5.458E-09 | 3.157E-09 | 2.136E-09 | 1.575E-09 | 1.226E-09 | 9.913E-10 | 8.243E-10 | 7.001E-10 | 6.048E-10 |
| WSW | 1.102E-08 | 5.983E-09 | 3.974E-09 | 2.336E-09 | 1.607E-09 | 1.203E-09 | 9.507E-10 | 7.791E-10 | 6.554E-10 | 5.619E-10 | 4.887E-10 |
| W | 1.305E-08 | 7.312E-09 | 4.991E-09 | 3.086E-09 | 2.213E-09 | 1.697E-09 | 1.340E-09 | 1.081E-09 | 8.956E-10 | 7.582E-10 | 6.530E-10 |
| WNW | 1.779E-08 | 1.028E-08 | 7.216E-09 | 4.685E-09 | 3.462E-09 | 2.662E-09 | 2.081E-09 | 1.682E-09 | 1.398E-09 | 1.187E-09 | 1.026E-09 |
| NW | 2.033E-08 | 1.153E-08 | 7.977E-09 | 5.057E-09 | 3.717E-09 | 2.927E-09 | 2.381E-09 | 1.964E-09 | 1.639E-09 | 1.394E-09 | 1.204E-09 |
| NNW | 1.859E-08 | 1.083E-08 | 7.626E-09 | 4.947E-09 | 3.652E-09 | 2.830E-09 | 2.227E-09 | 1.797E-09 | 1.491E-09 | 1.264E-09 | 1.090E-09 |

## Table 2.7-150 Annual Average X/Q Values (2.26 Day Decay, Undepleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

X/Q (sec/m$^3$) for Each Segment

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 5.456E-07 | 1.713E-07 | 7.169E-08 | 4.176E-08 | 2.823E-08 | 1.434E-08 | 6.221E-09 | 3.458E-09 | 2.260E-09 | 1.590E-09 |
| NNE | 9.156E-07 | 2.634E-07 | 1.045E-07 | 6.112E-08 | 4.188E-08 | 2.061E-08 | 8.344E-09 | 4.389E-09 | 2.870E-09 | 2.087E-09 |
| NE | 1.253E-06 | 3.257E-07 | 1.174E-07 | 6.598E-08 | 4.433E-08 | 2.254E-08 | 9.936E-09 | 5.652E-09 | 3.901E-09 | 2.959E-09 |
| ENE | 1.019E-06 | 2.687E-07 | 9.949E-08 | 5.691E-08 | 3.868E-08 | 2.003E-08 | 9.068E-09 | 5.265E-09 | 3.689E-09 | 2.834E-09 |
| E | 8.710E-07 | 2.297E-07 | 8.550E-08 | 4.924E-08 | 3.370E-08 | 1.755E-08 | 7.896E-09 | 4.491E-09 | 3.063E-09 | 2.286E-09 |
| ESE | 8.656E-07 | 2.237E-07 | 8.203E-08 | 4.670E-08 | 3.169E-08 | 1.637E-08 | 7.383E-09 | 4.271E-09 | 2.971E-09 | 2.261E-09 |
| SE | 7.186E-07 | 1.879E-07 | 6.936E-08 | 3.966E-08 | 2.699E-08 | 1.403E-08 | 6.399E-09 | 3.741E-09 | 2.629E-09 | 2.022E-09 |
| SSE | 6.977E-07 | 1.816E-07 | 6.721E-08 | 3.839E-08 | 2.603E-08 | 1.374E-08 | 6.815E-09 | 4.568E-09 | 3.633E-09 | 3.029E-09 |
| S | 5.606E-07 | 1.428E-07 | 5.182E-08 | 2.937E-08 | 1.986E-08 | 1.035E-08 | 4.886E-09 | 3.030E-09 | 2.260E-09 | 1.829E-09 |
| SSW | 3.914E-07 | 1.034E-07 | 3.796E-08 | 2.158E-08 | 1.459E-08 | 7.503E-09 | 3.371E-09 | 1.953E-09 | 1.370E-09 | 1.054E-09 |
| SW | 3.745E-07 | 1.226E-07 | 4.995E-08 | 2.807E-08 | 1.837E-08 | 8.600E-09 | 3.215E-09 | 1.585E-09 | 9.947E-10 | 7.016E-10 |
| WSW | 2.736E-07 | 8.766E-08 | 3.524E-08 | 1.976E-08 | 1.305E-08 | 6.210E-09 | 2.376E-09 | 1.210E-09 | 7.810E-10 | 5.625E-10 |
| W | 3.525E-07 | 1.084E-07 | 4.263E-08 | 2.380E-08 | 1.559E-08 | 7.555E-09 | 3.121E-09 | 1.692E-09 | 1.084E-09 | 7.599E-10 |
| WNW | 4.668E-07 | 1.425E-07 | 5.661E-08 | 3.199E-08 | 2.116E-08 | 1.059E-08 | 4.704E-09 | 2.643E-09 | 1.688E-09 | 1.190E-09 |
| NW | 5.206E-07 | 1.610E-07 | 6.435E-08 | 3.635E-08 | 2.410E-08 | 1.191E-08 | 5.111E-09 | 2.919E-09 | 1.960E-09 | 1.396E-09 |
| NNW | 4.430E-07 | 1.374E-07 | 5.643E-08 | 3.246E-08 | 2.185E-08 | 1.113E-08 | 4.967E-09 | 2.808E-09 | 1.803E-09 | 1.267E-09 |

## Table 2.7-151 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

| Annual Average X/Q (sec/m$^3$) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.545E-06 | 8.741E-07 | 5.153E-07 | 2.954E-07 | 1.459E-07 | 9.116E-08 | 6.355E-08 | 4.737E-08 | 3.698E-08 | 2.987E-08 | 2.488E-08 |
| NNE | 4.543E-06 | 1.517E-06 | 8.587E-07 | 4.677E-07 | 2.172E-07 | 1.319E-07 | 9.069E-08 | 6.716E-08 | 5.325E-08 | 4.371E-08 | 3.635E-08 |
| NE | 6.773E-06 | 2.145E-06 | 1.159E-06 | 6.039E-07 | 2.558E-07 | 1.464E-07 | 9.744E-08 | 7.096E-08 | 5.482E-08 | 4.415E-08 | 3.667E-08 |
| ENE | 5.417E-06 | 1.738E-06 | 9.455E-07 | 4.942E-07 | 2.125E-07 | 1.237E-07 | 8.353E-08 | 6.153E-08 | 4.799E-08 | 3.895E-08 | 3.256E-08 |
| E | 4.628E-06 | 1.490E-06 | 8.088E-07 | 4.230E-07 | 1.822E-07 | 1.063E-07 | 7.202E-08 | 5.325E-08 | 4.170E-08 | 3.398E-08 | 2.852E-08 |
| ESE | 4.672E-06 | 1.495E-06 | 8.019E-07 | 4.149E-07 | 1.765E-07 | 1.023E-07 | 6.873E-08 | 5.045E-08 | 3.924E-08 | 3.179E-08 | 2.654E-08 |
| SE | 3.819E-06 | 1.233E-06 | 6.674E-07 | 3.473E-07 | 1.487E-07 | 8.648E-08 | 5.832E-08 | 4.294E-08 | 3.348E-08 | 2.719E-08 | 2.274E-08 |
| SSE | 3.768E-06 | 1.200E-06 | 6.458E-07 | 3.345E-07 | 1.433E-07 | 8.353E-08 | 5.637E-08 | 4.148E-08 | 3.230E-08 | 2.617E-08 | 2.184E-08 |
| S | 3.143E-06 | 9.727E-07 | 5.148E-07 | 2.644E-07 | 1.114E-07 | 6.410E-08 | 4.287E-08 | 3.136E-08 | 2.433E-08 | 1.967E-08 | 1.639E-08 |
| SSW | 2.056E-06 | 6.629E-07 | 3.640E-07 | 1.905E-07 | 8.155E-08 | 4.723E-08 | 3.176E-08 | 2.332E-08 | 1.814E-08 | 1.468E-08 | 1.224E-08 |
| SW | 1.562E-06 | 5.816E-07 | 3.601E-07 | 2.140E-07 | 1.066E-07 | 6.535E-08 | 4.453E-08 | 3.249E-08 | 2.488E-08 | 1.976E-08 | 1.613E-08 |
| WSW | 1.174E-06 | 4.288E-07 | 2.623E-07 | 1.544E-07 | 7.567E-08 | 4.604E-08 | 3.127E-08 | 2.279E-08 | 1.745E-08 | 1.386E-08 | 1.144E-08 |
| W | 1.605E-06 | 5.627E-07 | 3.354E-07 | 1.928E-07 | 9.195E-08 | 5.529E-08 | 3.735E-08 | 2.714E-08 | 2.075E-08 | 1.648E-08 | 1.346E-08 |
| WNW | 2.199E-06 | 7.530E-07 | 4.421E-07 | 2.531E-07 | 1.207E-07 | 7.303E-08 | 4.968E-08 | 3.635E-08 | 2.797E-08 | 2.233E-08 | 1.835E-08 |
| NW | 2.412E-06 | 8.351E-07 | 4.942E-07 | 2.849E-07 | 1.370E-07 | 8.314E-08 | 5.657E-08 | 4.137E-08 | 3.181E-08 | 2.538E-08 | 2.091E-08 |
| NNW | 2.128E-06 | 7.133E-07 | 4.163E-07 | 2.389E-07 | 1.167E-07 | 7.206E-08 | 4.972E-08 | 3.675E-08 | 2.851E-08 | 2.291E-08 | 1.907E-08 |

## Table 2.7-151 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

| | Annual Average X/Q (sec/m$^3$) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distance in Miles from the Site | | | | | | | | | | |
| **Sector** | **5** | **7.5** | **10** | **15.0** | **20** | **25.0** | **30** | **35.0** | **40** | **45.0** | **50** |
| N | 2.116E-08 | 1.222E-08 | 8.483E-09 | 5.337E-09 | 3.819E-09 | 2.863E-09 | 2.222E-09 | 1.770E-09 | 1.437E-09 | 1.194E-09 | 1.010E-09 |
| NNE | 3.089E-08 | 1.712E-08 | 1.152E-08 | 6.874E-09 | 4.756E-09 | 3.570E-09 | 2.824E-09 | 2.315E-09 | 1.943E-09 | 1.666E-09 | 1.450E-09 |
| NE | 3.120E-08 | 1.801E-08 | 1.261E-08 | 8.026E-09 | 5.837E-09 | 4.565E-09 | 3.740E-09 | 3.163E-09 | 2.728E-09 | 2.398E-09 | 2.134E-09 |
| ENE | 2.786E-08 | 1.642E-08 | 1.166E-08 | 7.567E-09 | 5.583E-09 | 4.419E-09 | 3.659E-09 | 3.124E-09 | 2.718E-09 | 2.408E-09 | 2.160E-09 |
| E | 2.450E-08 | 1.450E-08 | 1.029E-08 | 6.628E-09 | 4.832E-09 | 3.769E-09 | 3.070E-09 | 2.578E-09 | 2.212E-09 | 1.932E-09 | 1.709E-09 |
| ESE | 2.270E-08 | 1.330E-08 | 9.413E-09 | 6.088E-09 | 4.479E-09 | 3.531E-09 | 2.909E-09 | 2.471E-09 | 2.144E-09 | 1.893E-09 | 1.693E-09 |
| SE | 1.948E-08 | 1.151E-08 | 8.196E-09 | 5.348E-09 | 3.963E-09 | 3.147E-09 | 2.612E-09 | 2.234E-09 | 1.948E-09 | 1.728E-09 | 1.551E-09 |
| SSE | 1.865E-08 | 1.123E-08 | 8.215E-09 | 5.754E-09 | 4.636E-09 | 4.010E-09 | 3.601E-09 | 3.268E-09 | 2.944E-09 | 2.655E-09 | 2.392E-09 |
| S | 1.398E-08 | 8.290E-09 | 5.965E-09 | 4.011E-09 | 3.080E-09 | 2.540E-09 | 2.189E-09 | 1.941E-09 | 1.747E-09 | 1.592E-09 | 1.455E-09 |
| SSW | 1.045E-08 | 6.126E-09 | 4.334E-09 | 2.802E-09 | 2.066E-09 | 1.636E-09 | 1.357E-09 | 1.162E-09 | 1.013E-09 | 8.986E-10 | 8.064E-10 |
| SW | 1.348E-08 | 7.098E-09 | 4.588E-09 | 2.576E-09 | 1.705E-09 | 1.235E-09 | 9.488E-10 | 7.577E-10 | 6.223E-10 | 5.230E-10 | 4.469E-10 |
| WSW | 9.647E-09 | 5.118E-09 | 3.338E-09 | 1.912E-09 | 1.292E-09 | 9.563E-10 | 7.468E-10 | 6.026E-10 | 4.974E-10 | 4.187E-10 | 3.577E-10 |
| W | 1.127E-08 | 6.199E-09 | 4.175E-09 | 2.539E-09 | 1.769E-09 | 1.312E-09 | 1.010E-09 | 7.956E-10 | 6.441E-10 | 5.341E-10 | 4.513E-10 |
| WNW | 1.542E-08 | 8.792E-09 | 6.119E-09 | 3.925E-09 | 2.793E-09 | 2.076E-09 | 1.579E-09 | 1.244E-09 | 1.010E-09 | 8.404E-10 | 7.120E-10 |
| NW | 1.763E-08 | 9.840E-09 | 6.728E-09 | 4.223E-09 | 3.064E-09 | 2.342E-09 | 1.848E-09 | 1.490E-09 | 1.217E-09 | 1.014E-09 | 8.605E-10 |
| NNW | 1.622E-08 | 9.339E-09 | 6.532E-09 | 4.212E-09 | 3.017E-09 | 2.255E-09 | 1.727E-09 | 1.360E-09 | 1.104E-09 | 9.171E-10 | 7.765E-10 |

## Table 2.7-151 Annual Average X/Q Values (8.0 Day Decay, Depleted) for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

| | X/Q (sec/m$^3$) for Each Segment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Segment Boundaries in Miles from the Site | | | | | | | | | |
| Sector | .5-1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-10 | 10-20 | 20-30 | 30-40 | 40-50 |
| N | 4.973E-07 | 1.548E-07 | 6.444E-08 | 3.724E-08 | 2.498E-08 | 1.255E-08 | 5.361E-09 | 2.861E-09 | 1.772E-09 | 1.198E-09 |
| NNE | 8.313E-07 | 2.350E-07 | 9.226E-08 | 5.359E-08 | 3.651E-08 | 1.769E-08 | 6.965E-09 | 3.588E-09 | 2.319E-09 | 1.668E-09 |
| NE | 1.131E-06 | 2.845E-07 | 9.990E-08 | 5.537E-08 | 3.686E-08 | 1.854E-08 | 8.071E-09 | 4.574E-09 | 3.162E-09 | 2.398E-09 |
| ENE | 9.210E-07 | 2.357E-07 | 8.545E-08 | 4.841E-08 | 3.271E-08 | 1.685E-08 | 7.595E-09 | 4.425E-09 | 3.122E-09 | 2.408E-09 |
| E | 7.888E-07 | 2.020E-07 | 7.367E-08 | 4.206E-08 | 2.865E-08 | 1.485E-08 | 6.643E-09 | 3.773E-09 | 2.579E-09 | 1.932E-09 |
| ESE | 7.840E-07 | 1.965E-07 | 7.037E-08 | 3.960E-08 | 2.667E-08 | 1.366E-08 | 6.112E-09 | 3.535E-09 | 2.472E-09 | 1.893E-09 |
| SE | 6.509E-07 | 1.652E-07 | 5.967E-08 | 3.379E-08 | 2.285E-08 | 1.181E-08 | 5.365E-09 | 3.151E-09 | 2.233E-09 | 1.728E-09 |
| SSE | 6.306E-07 | 1.592E-07 | 5.766E-08 | 3.258E-08 | 2.194E-08 | 1.154E-08 | 5.804E-09 | 4.013E-09 | 3.240E-09 | 2.643E-09 |
| S | 5.053E-07 | 1.244E-07 | 4.393E-08 | 2.456E-08 | 1.647E-08 | 8.522E-09 | 4.032E-09 | 2.544E-09 | 1.938E-09 | 1.587E-09 |
| SSW | 3.533E-07 | 9.051E-08 | 3.251E-08 | 1.830E-08 | 1.230E-08 | 6.289E-09 | 2.815E-09 | 1.639E-09 | 1.161E-09 | 8.982E-10 |
| SW | 3.444E-07 | 1.121E-07 | 4.526E-08 | 2.510E-08 | 1.622E-08 | 7.400E-09 | 2.636E-09 | 1.246E-09 | 7.607E-10 | 5.242E-10 |
| WSW | 2.513E-07 | 7.999E-08 | 3.182E-08 | 1.760E-08 | 1.149E-08 | 5.334E-09 | 1.954E-09 | 9.621E-10 | 6.037E-10 | 4.194E-10 |
| W | 3.225E-07 | 9.806E-08 | 3.805E-08 | 2.095E-08 | 1.354E-08 | 6.425E-09 | 2.560E-09 | 1.313E-09 | 7.991E-10 | 5.360E-10 |
| WNW | 4.272E-07 | 1.289E-07 | 5.057E-08 | 2.821E-08 | 1.844E-08 | 9.077E-09 | 3.910E-09 | 2.069E-09 | 1.251E-09 | 8.432E-10 |
| NW | 4.769E-07 | 1.459E-07 | 5.758E-08 | 3.209E-08 | 2.102E-08 | 1.019E-08 | 4.265E-09 | 2.337E-09 | 1.489E-09 | 1.018E-09 |
| NNW | 4.035E-07 | 1.240E-07 | 5.049E-08 | 2.873E-08 | 1.915E-08 | 9.620E-09 | 4.196E-09 | 2.247E-09 | 1.367E-09 | 9.203E-10 |

## Table 2.7-152 Annual Average D/Q Values for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 1 of 3)

**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **0.25** | **0.5** | **0.75** | **1.0** | **1.5** | **2.0** | **2.5** | **3.0** | **3.5** | **4.0** | **4.5** |
| N | 2.765E-08 | 1.153E-08 | 7.216E-09 | 3.951E-09 | 1.625E-09 | 8.936E-10 | 5.656E-10 | 3.900E-10 | 2.846E-10 | 2.164E-10 | 1.697E-10 |
| NNE | 5.129E-08 | 2.093E-08 | 1.227E-08 | 6.502E-09 | 2.568E-09 | 1.388E-09 | 8.697E-10 | 5.958E-10 | 4.371E-10 | 3.353E-10 | 2.624E-10 |
| NE | 6.475E-08 | 2.432E-08 | 1.330E-08 | 6.599E-09 | 2.436E-09 | 1.249E-09 | 7.543E-10 | 5.040E-10 | 3.602E-10 | 2.702E-10 | 2.103E-10 |
| ENE | 4.778E-08 | 1.835E-08 | 1.017E-08 | 5.090E-09 | 1.892E-09 | 9.768E-10 | 5.931E-10 | 3.978E-10 | 2.851E-10 | 2.144E-10 | 1.670E-10 |
| E | 3.941E-08 | 1.587E-08 | 8.962E-09 | 4.513E-09 | 1.672E-09 | 8.643E-10 | 5.256E-10 | 3.531E-10 | 2.536E-10 | 1.910E-10 | 1.491E-10 |
| ESE | 3.832E-08 | 1.556E-08 | 8.798E-09 | 4.425E-09 | 1.634E-09 | 8.431E-10 | 5.120E-10 | 3.438E-10 | 2.468E-10 | 1.859E-10 | 1.452E-10 |
| SE | 3.211E-08 | 1.300E-08 | 7.355E-09 | 3.706E-09 | 1.372E-09 | 7.094E-10 | 4.314E-10 | 2.899E-10 | 2.082E-10 | 1.569E-10 | 1.225E-10 |
| SSE | 3.073E-08 | 1.188E-08 | 6.595E-09 | 3.298E-09 | 1.222E-09 | 6.298E-10 | 3.820E-10 | 2.561E-10 | 1.835E-10 | 1.380E-10 | 1.075E-10 |
| S | 2.532E-08 | 9.258E-09 | 4.993E-09 | 2.456E-09 | 9.030E-10 | 4.602E-10 | 2.768E-10 | 1.843E-10 | 1.313E-10 | 9.831E-11 | 7.635E-11 |
| SSW | 2.053E-08 | 7.652E-09 | 4.146E-09 | 2.039E-09 | 7.477E-10 | 3.803E-10 | 2.283E-10 | 1.519E-10 | 1.082E-10 | 8.103E-11 | 6.296E-11 |
| SW | 2.861E-08 | 1.292E-08 | 8.666E-09 | 4.786E-09 | 1.980E-09 | 1.079E-09 | 6.775E-10 | 4.647E-10 | 3.381E-10 | 2.567E-10 | 2.013E-10 |
| WSW | 1.856E-08 | 8.272E-09 | 5.513E-09 | 3.041E-09 | 1.256E-09 | 6.867E-10 | 4.324E-10 | 2.971E-10 | 2.165E-10 | 1.645E-10 | 1.335E-10 |
| W | 2.451E-08 | 1.109E-08 | 6.617E-09 | 3.708E-09 | 1.482E-09 | 7.895E-10 | 4.882E-10 | 3.315E-10 | 2.397E-10 | 1.812E-10 | 1.418E-10 |
| WNW | 2.936E-08 | 1.354E-08 | 8.467E-09 | 4.474E-09 | 1.784E-09 | 9.530E-10 | 5.909E-10 | 4.021E-10 | 2.911E-10 | 2.204E-10 | 1.725E-10 |
| NW | 2.813E-08 | 1.310E-08 | 8.119E-09 | 4.721E-09 | 1.914E-09 | 1.030E-09 | 6.416E-10 | 4.378E-10 | 3.176E-10 | 2.407E-10 | 1.886E-10 |
| NNW | 2.201E-08 | 8.907E-09 | 5.592E-09 | 3.098E-09 | 1.294E-09 | 7.174E-10 | 4.563E-10 | 3.155E-10 | 2.306E-10 | 1.754E-10 | 1.416E-10 |

## Table 2.7-152 Annual Average D/Q Values for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 2 of 3)

Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors

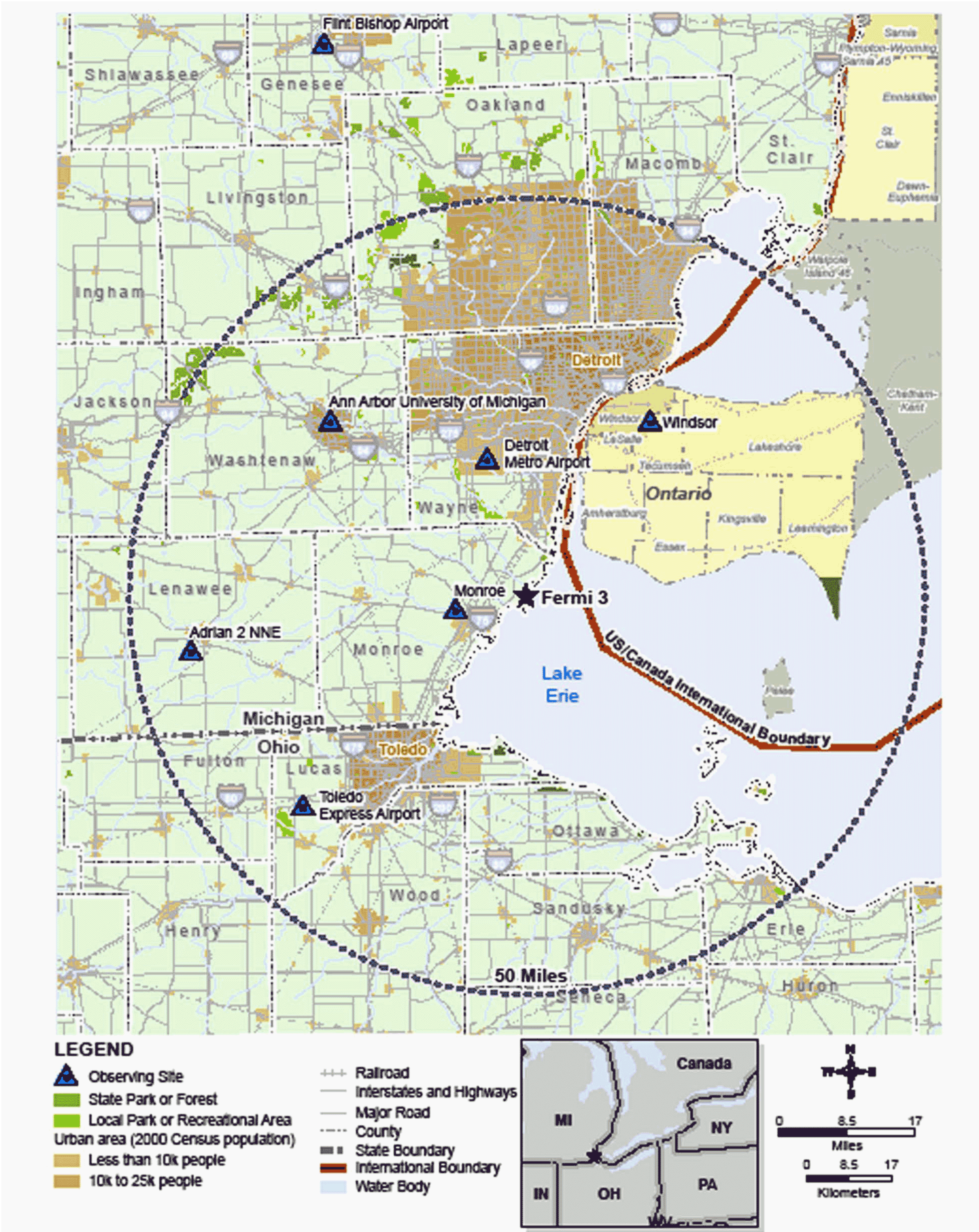
| | Distance in Miles from the Site | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector | 5 | 7.5 | 10 | 15.0 | 20 | 25.0 | 30 | 35.0 | 40 | 45.0 | 50 |
| N | 1.364E-10 | 6.574E-11 | 3.996E-11 | 2.105E-11 | 2.895E-11 | 2.092E-11 | 1.361E-11 | 1.056E-11 | 8.277E-12 | 6.632E-12 | 5.417E-12 |
| NNE | 2.107E-10 | 9.883E-11 | 5.986E-11 | 3.098E-11 | 1.950E-11 | 1.378E-11 | 1.050E-11 | 8.413E-12 | 6.976E-12 | 5.945E-12 | 5.189E-12 |
| NE | 1.683E-10 | 7.727E-11 | 4.722E-11 | 2.456E-11 | 1.539E-11 | 1.090E-11 | 8.410E-12 | 6.876E-12 | 5.845E-12 | 5.089E-12 | 4.558E-12 |
| ENE | 1.339E-10 | 6.177E-11 | 3.780E-11 | 1.972E-11 | 1.240E-11 | 8.871E-12 | 6.932E-12 | 5.752E-12 | 4.958E-12 | 4.373E-12 | 3.970E-12 |
| E | 1.197E-10 | 5.551E-11 | 3.412E-11 | 1.794E-11 | 1.127E-11 | 8.109E-12 | 6.156E-12 | 4.855E-12 | 3.938E-12 | 3.263E-12 | 2.755E-12 |
| ESE | 1.166E-10 | 5.409E-11 | 3.330E-11 | 1.752E-11 | 1.103E-11 | 7.967E-12 | 6.093E-12 | 4.858E-12 | 3.998E-12 | 3.425E-12 | 3.212E-12 |
| SE | 9.837E-11 | 4.570E-11 | 2.807E-11 | 1.479E-11 | 9.318E-12 | 6.704E-12 | 5.267E-12 | 4.368E-12 | 3.782E-12 | 3.359E-12 | 3.062E-12 |
| SSE | 8.619E-11 | 3.991E-11 | 2.449E-11 | 1.278E-11 | 8.090E-12 | 5.787E-12 | 9.466E-12 | 1.413E-11 | 1.202E-11 | 9.480E-12 | 7.206E-12 |
| S | 6.103E-11 | 2.786E-11 | 1.703E-11 | 8.808E-12 | 5.503E-12 | 3.905E-12 | 3.037E-12 | 2.521E-12 | 3.209E-12 | 3.650E-12 | 5.129E-12 |
| SSW | 5.036E-11 | 2.303E-11 | 1.408E-11 | 7.300E-12 | 4.574E-12 | 3.248E-12 | 2.514E-12 | 2.067E-12 | 1.774E-12 | 1.705E-12 | 1.993E-12 |
| SW | 1.619E-10 | 7.624E-11 | 4.581E-11 | 2.359E-11 | 1.475E-11 | 1.031E-11 | 7.719E-12 | 6.045E-12 | 4.906E-12 | 4.128E-12 | 3.646E-12 |
| WSW | 1.073E-10 | 5.018E-11 | 2.988E-11 | 1.523E-11 | 9.519E-12 | 6.752E-12 | 6.160E-12 | 5.460E-12 | 4.419E-12 | 3.579E-12 | 2.971E-12 |
| W | 1.139E-10 | 5.332E-11 | 3.228E-11 | 2.195E-11 | 1.703E-11 | 1.165E-11 | 8.529E-12 | 6.465E-12 | 5.032E-12 | 4.023E-12 | 3.284E-12 |
| WNW | 1.387E-10 | 6.622E-11 | 3.962E-11 | 3.293E-11 | 2.289E-11 | 1.552E-11 | 1.118E-11 | 8.433E-12 | 6.563E-12 | 5.243E-12 | 4.281E-12 |
| NW | 1.517E-10 | 7.161E-11 | 4.338E-11 | 2.266E-11 | 2.469E-11 | 1.806E-11 | 1.301E-11 | 9.672E-12 | 7.554E-12 | 6.050E-12 | 4.943E-12 |
| NNW | 1.137E-10 | 5.372E-11 | 3.236E-11 | 2.460E-11 | 2.173E-11 | 1.439E-11 | 1.030E-11 | 7.814E-12 | 6.088E-12 | 4.869E-12 | 3.976E-12 |

## Table 2.7-152 Annual Average D/Q Values for Mixed-Mode Release from the Turbine Building Stack (Based on 1985-1989 met data) (Sheet 3 of 3)

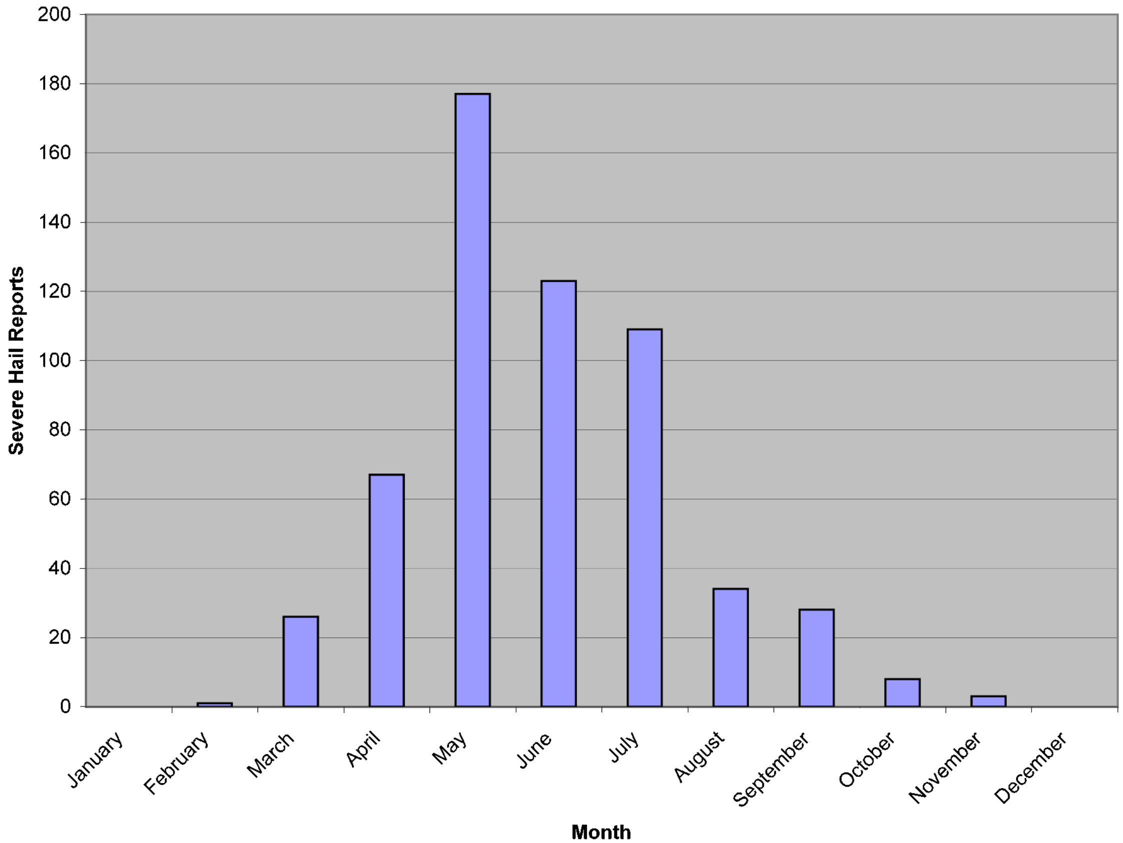
**Relative Deposition per Unit Area ($m^{-2}$) at Fixed Points by Downwind Sectors**

| | Segment Boundaries in Miles from the Site | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **.5-1** | **1-2** | **2-3** | **3-4** | **4-5** | **5-10** | **10-20** | **20-30** | **30-40** | **40-50** |
| N | 6.723E-09 | 1.817E-09 | 5.828E-10 | 2.887E-10 | 1.712E-10 | 6.998E-11 | 2.876E-11 | 2.014E-11 | 1.056E-11 | 6.669E-12 |
| NNE | 1.163E-08 | 2.918E-09 | 8.983E-10 | 4.437E-10 | 2.648E-10 | 1.064E-10 | 3.229E-11 | 1.399E-11 | 8.461E-12 | 5.970E-12 |
| NE | 1.277E-08 | 2.834E-09 | 7.861E-10 | 3.670E-10 | 2.125E-10 | 8.414E-11 | 2.552E-11 | 1.110E-11 | 6.922E-12 | 5.116E-12 |
| ENE | 9.728E-09 | 2.196E-09 | 6.173E-10 | 2.904E-10 | 1.688E-10 | 6.714E-11 | 2.049E-11 | 9.037E-12 | 5.787E-12 | 4.397E-12 |
| E | 8.520E-09 | 1.944E-09 | 5.469E-10 | 2.582E-10 | 1.507E-10 | 6.028E-11 | 1.857E-11 | 8.171E-12 | 4.878E-12 | 3.275E-12 |
| ESE | 8.356E-09 | 1.902E-09 | 5.330E-10 | 2.513E-10 | 1.466E-10 | 5.874E-11 | 1.814E-11 | 8.034E-12 | 4.883E-12 | 3.516E-12 |
| SE | 6.987E-09 | 1.596E-09 | 4.489E-10 | 2.120E-10 | 1.237E-10 | 4.957E-11 | 1.531E-11 | 6.827E-12 | 4.402E-12 | 3.374E-12 |
| SSE | 6.304E-09 | 1.420E-09 | 3.977E-10 | 1.869E-10 | 1.086E-10 | 4.334E-11 | 1.330E-11 | 7.873E-12 | 1.199E-11 | 9.390E-12 |
| S | 4.813E-09 | 1.051E-09 | 2.887E-10 | 1.339E-10 | 7.718E-11 | 3.042E-11 | 9.166E-12 | 3.984E-12 | 2.931E-12 | 4.067E-12 |
| SSW | 3.989E-09 | 8.713E-10 | 2.383E-10 | 1.103E-10 | 6.365E-11 | 2.512E-11 | 7.594E-12 | 3.308E-12 | 2.083E-12 | 1.832E-12 |
| SW | 7.887E-09 | 2.203E-09 | 6.995E-10 | 3.433E-10 | 2.031E-10 | 8.175E-11 | 2.460E-11 | 1.046E-11 | 6.089E-12 | 4.180E-12 |
| WSW | 5.027E-09 | 1.400E-09 | 4.461E-10 | 2.197E-10 | 1.329E-10 | 5.384E-11 | 1.595E-11 | 7.253E-12 | 5.264E-12 | 3.603E-12 |
| W | 6.317E-09 | 1.669E-09 | 5.059E-10 | 2.437E-10 | 1.432E-10 | 5.744E-11 | 2.206E-11 | 1.184E-11 | 6.509E-12 | 4.048E-12 |
| WNW | 7.819E-09 | 2.012E-09 | 6.119E-10 | 2.959E-10 | 1.742E-10 | 7.050E-11 | 2.995E-11 | 1.575E-11 | 8.504E-12 | 5.278E-12 |
| NW | 7.716E-09 | 2.145E-09 | 6.637E-10 | 3.227E-10 | 1.904E-10 | 7.686E-11 | 2.817E-11 | 1.781E-11 | 9.820E-12 | 6.086E-12 |
| NNW | 5.220E-09 | 1.439E-09 | 4.696E-10 | 2.338E-10 | 1.413E-10 | 5.755E-11 | 2.505E-11 | 1.471E-11 | 7.867E-12 | 4.899E-12 |

## Figure 2.7-1 Climatological Observing Stations near the Fermi Site

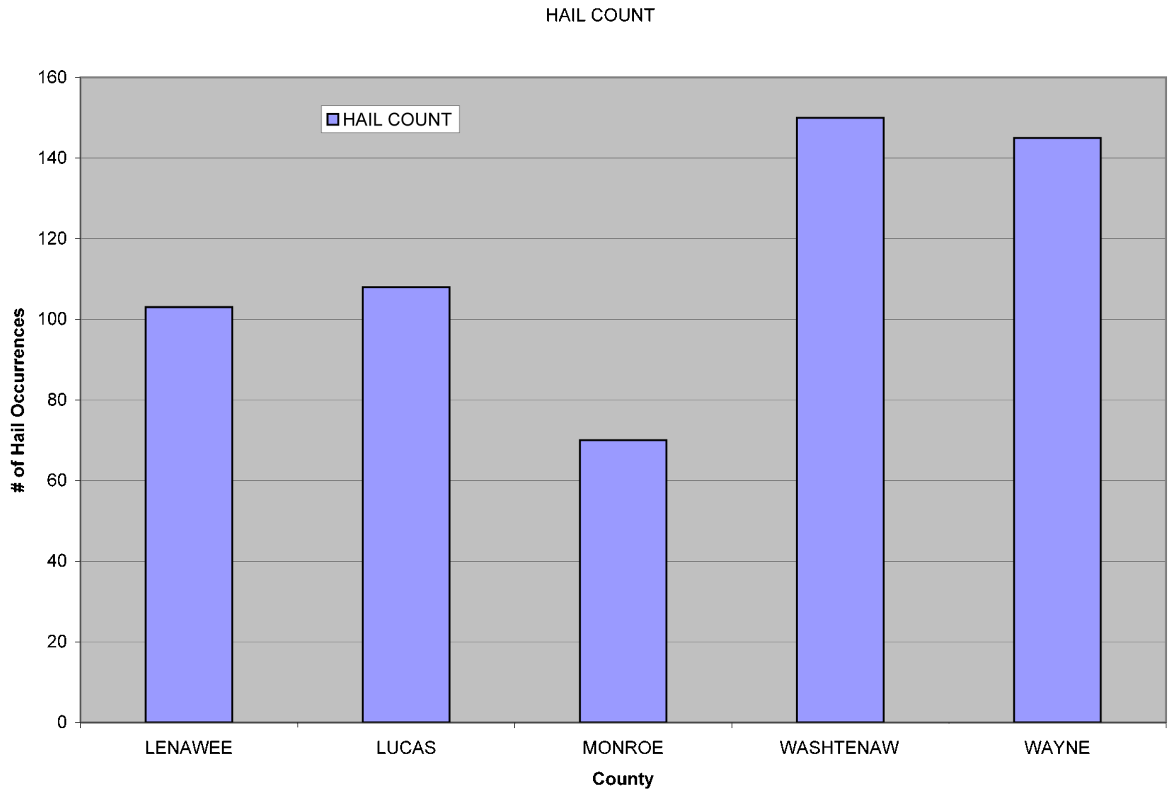


## Figure 2.7-2 Total Reports of Severe Hail for the Five-County Area (1955-2007)



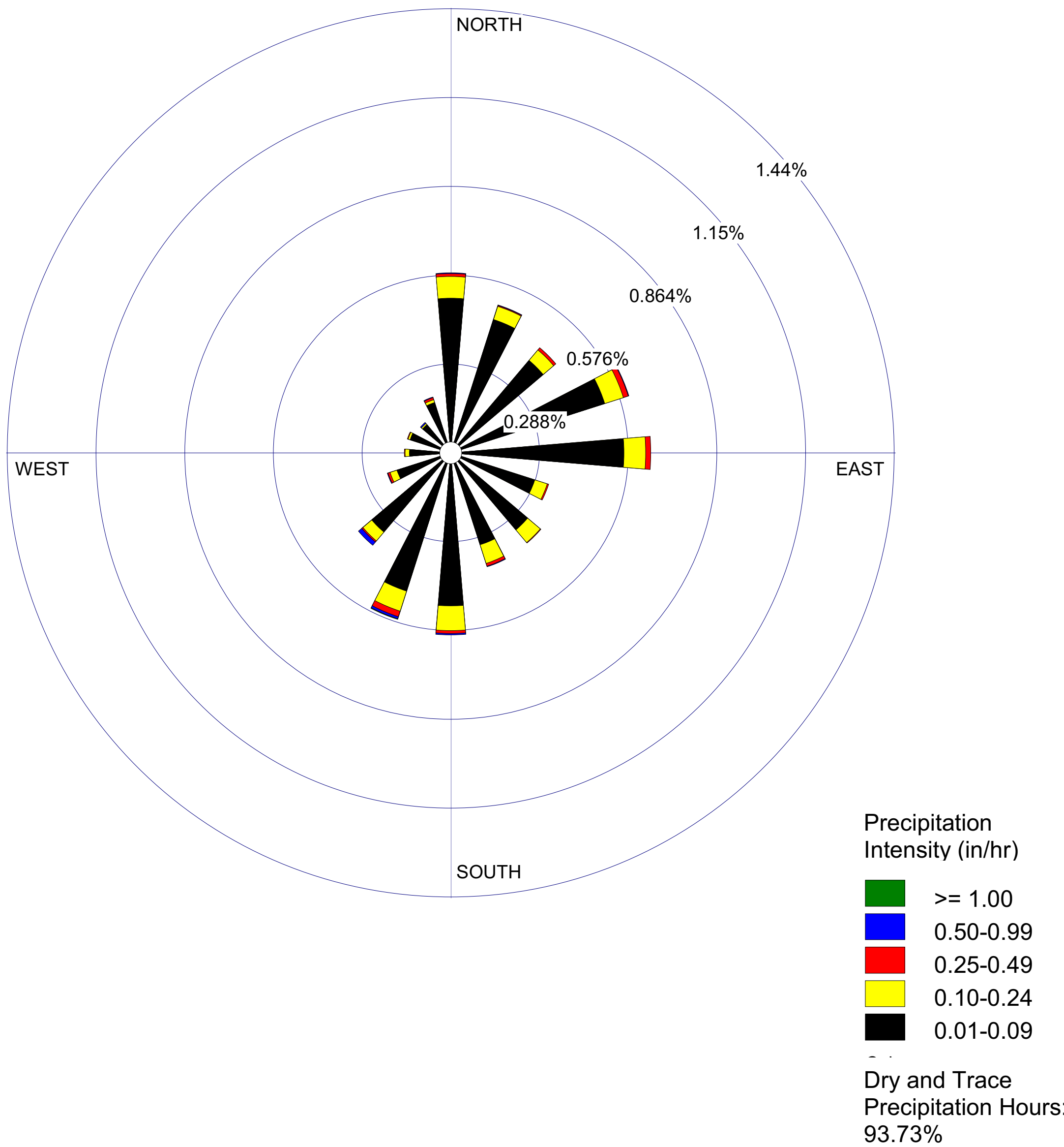

Source: Reference 2.7-29

## Figure 2.7-3 Total Hail Reports for the Five-County Area (1955-2007)



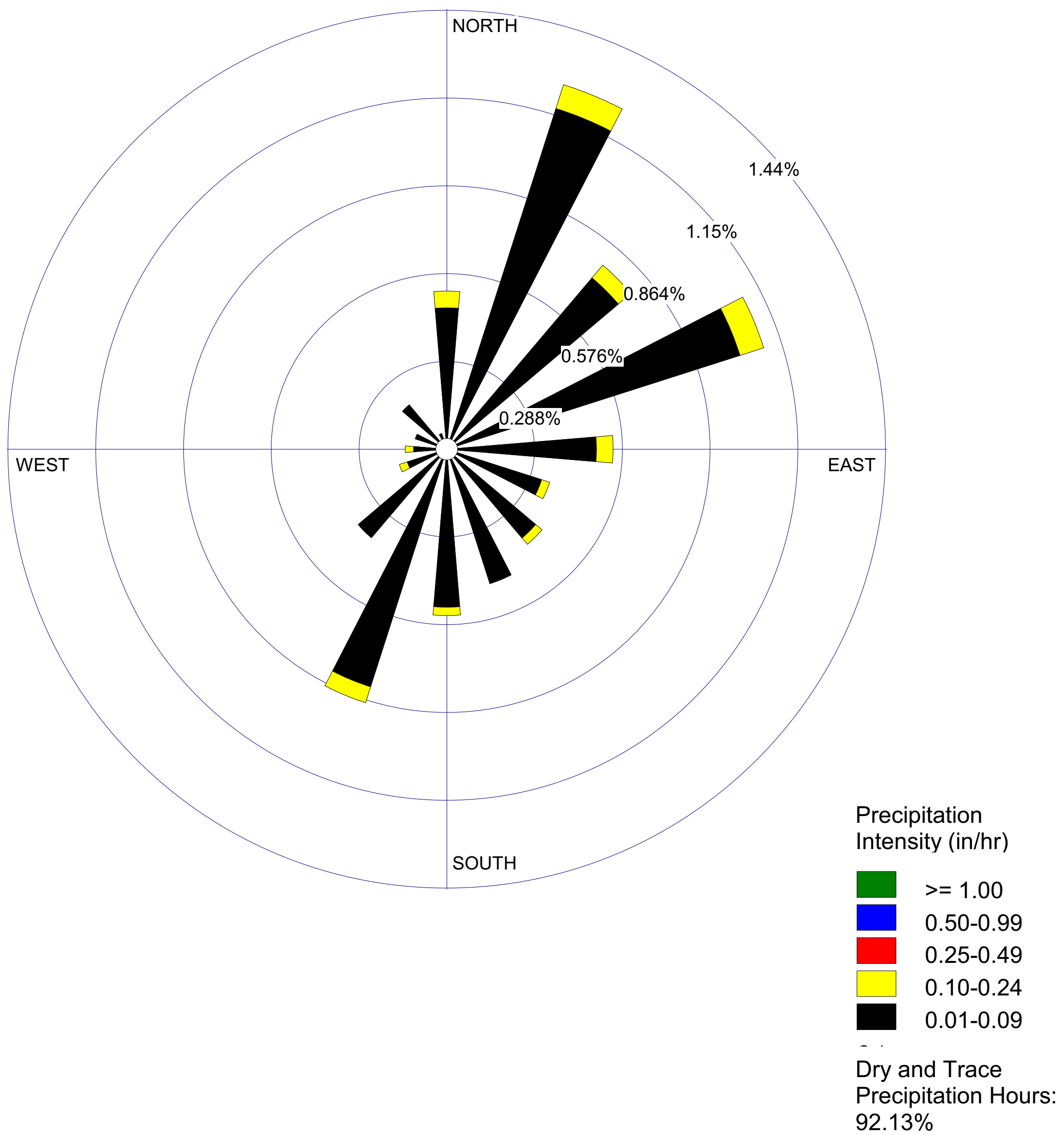

Source: Reference 2.7-29 and Reference 2.7-34

**Figure 2.7-4 Detroit Metropolitan Airport Annual Precipitation Rose (2003-2007)**



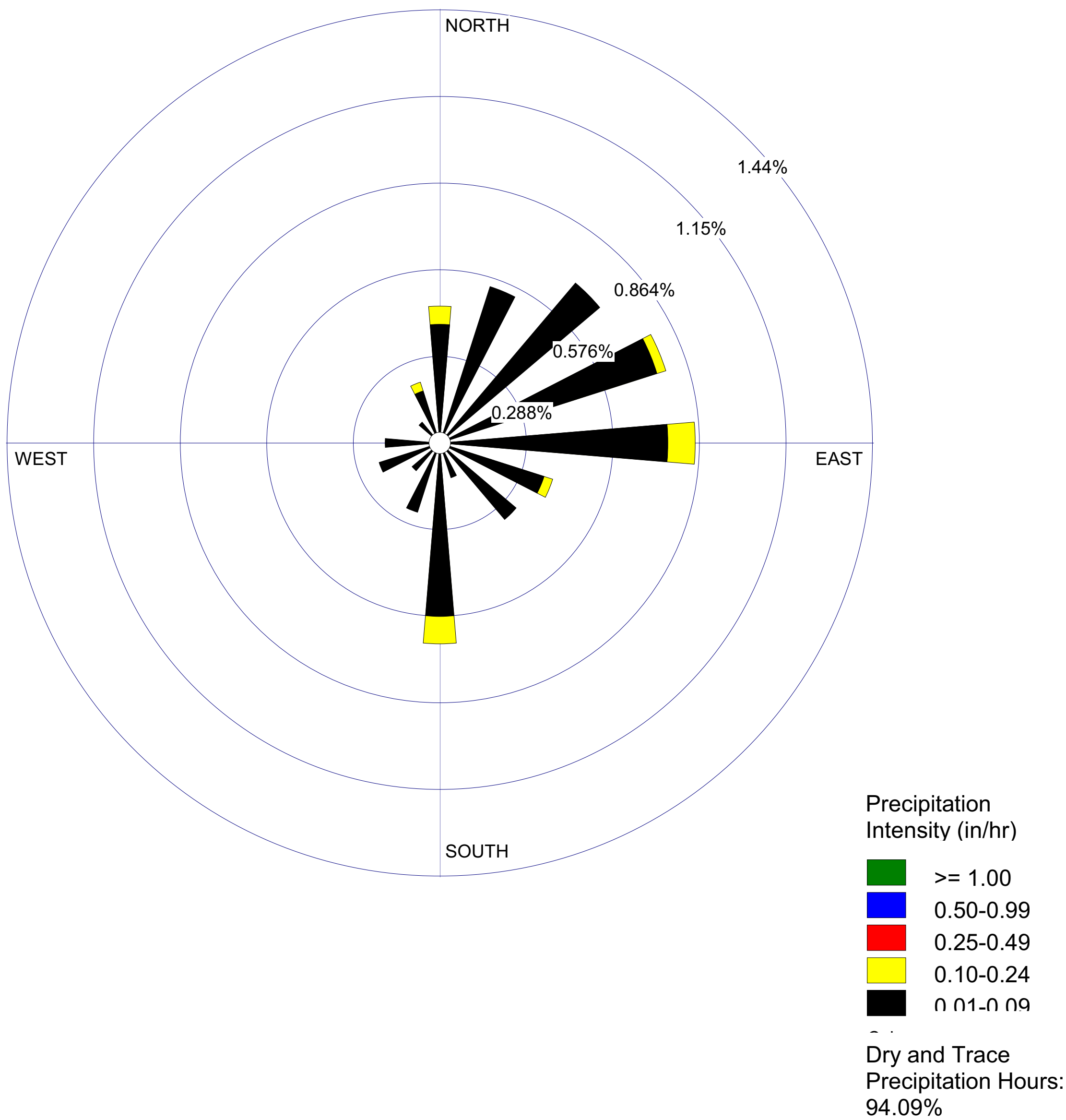

Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-5 Detroit Metropolitan Airport January Precipitation Rose (2003-2007)**



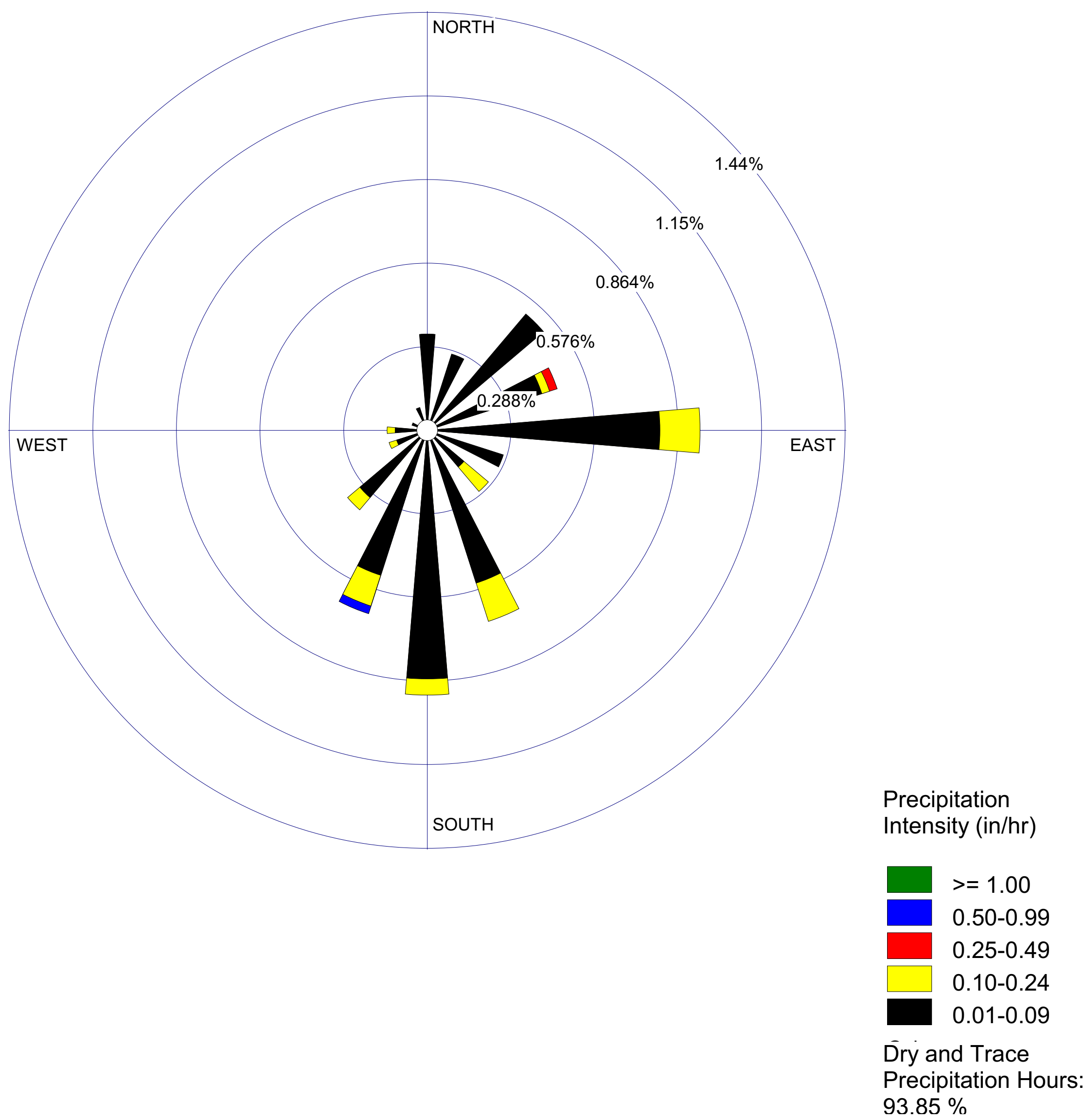

Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-6 Detroit Metropolitan Airport February Precipitation Rose (2003-2007)**



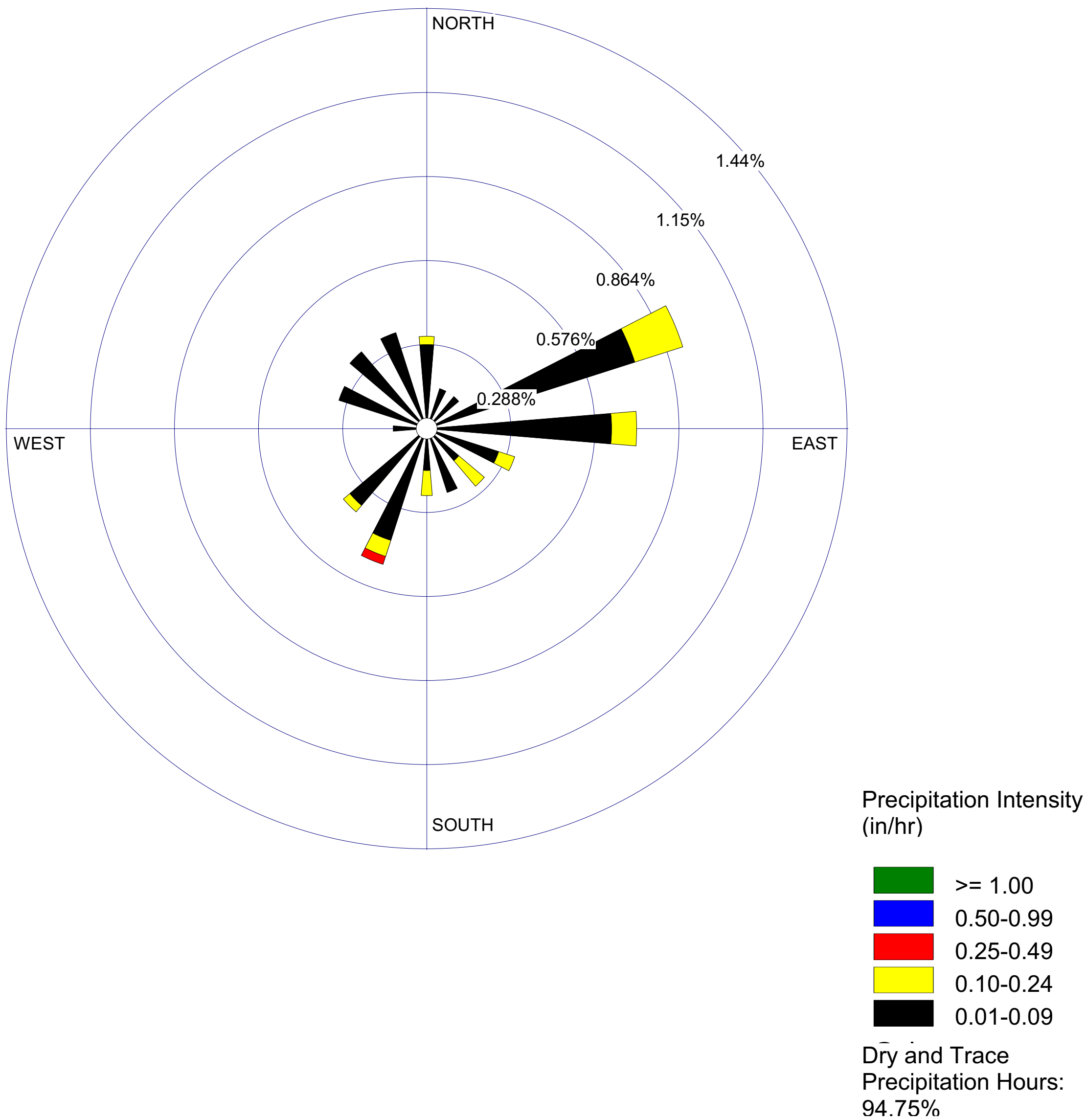

Source: Reference 2.7-41 and Reference 2.7-44

## Figure 2.7-7 Detroit Metropolitan Airport March Precipitation Rose (2003-2007)




Source: Reference 2.7-41 and Reference 2.7-44

## Figure 2.7-8 Detroit Metropolitan Airport April Precipitation Rose (2003-2007)




Source: Reference 2.7-41 and Reference 2.7-44

## Figure 2.7-9 Detroit Metropolitan Airport May Precipitation Rose (2003-2007)

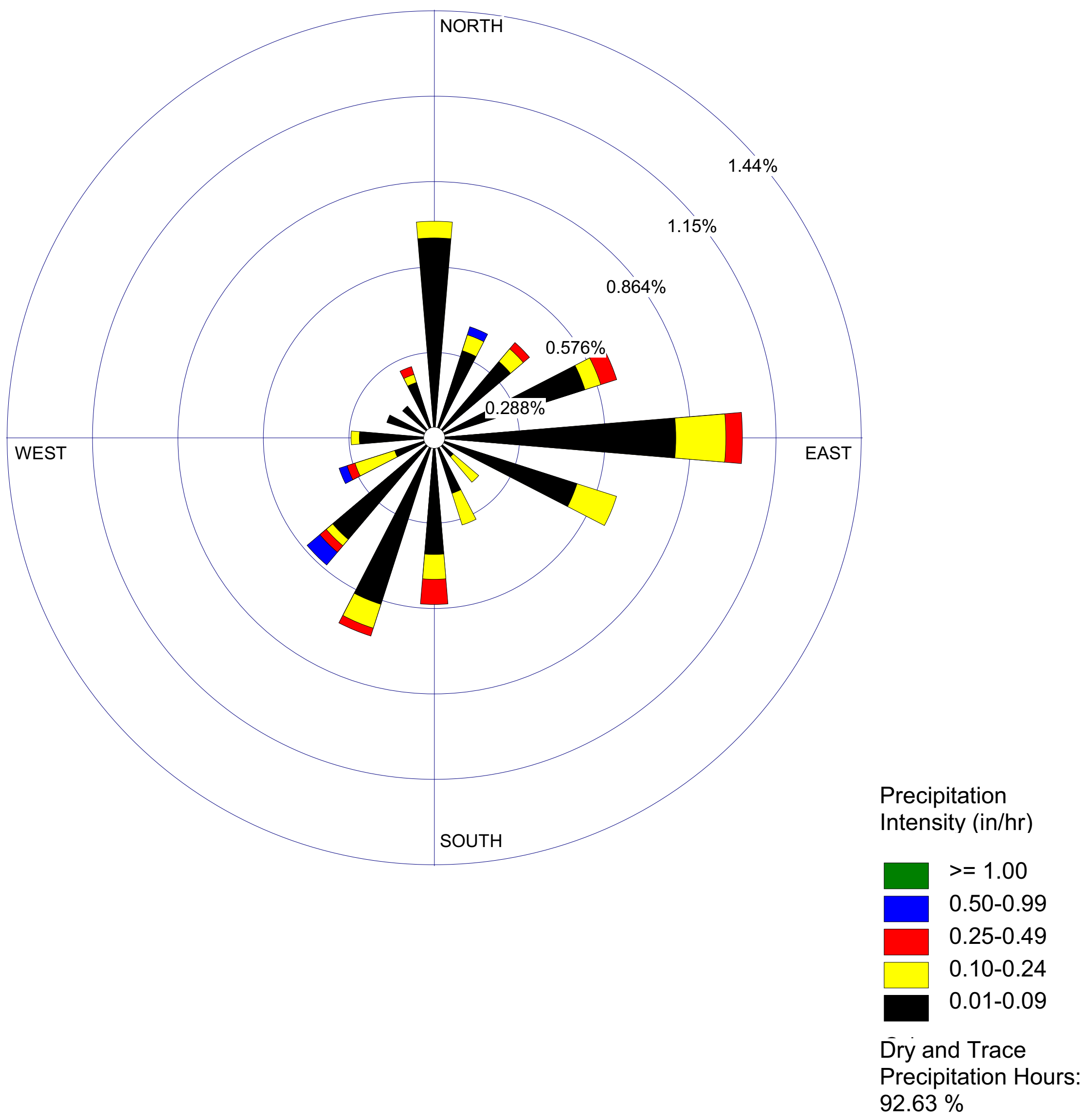



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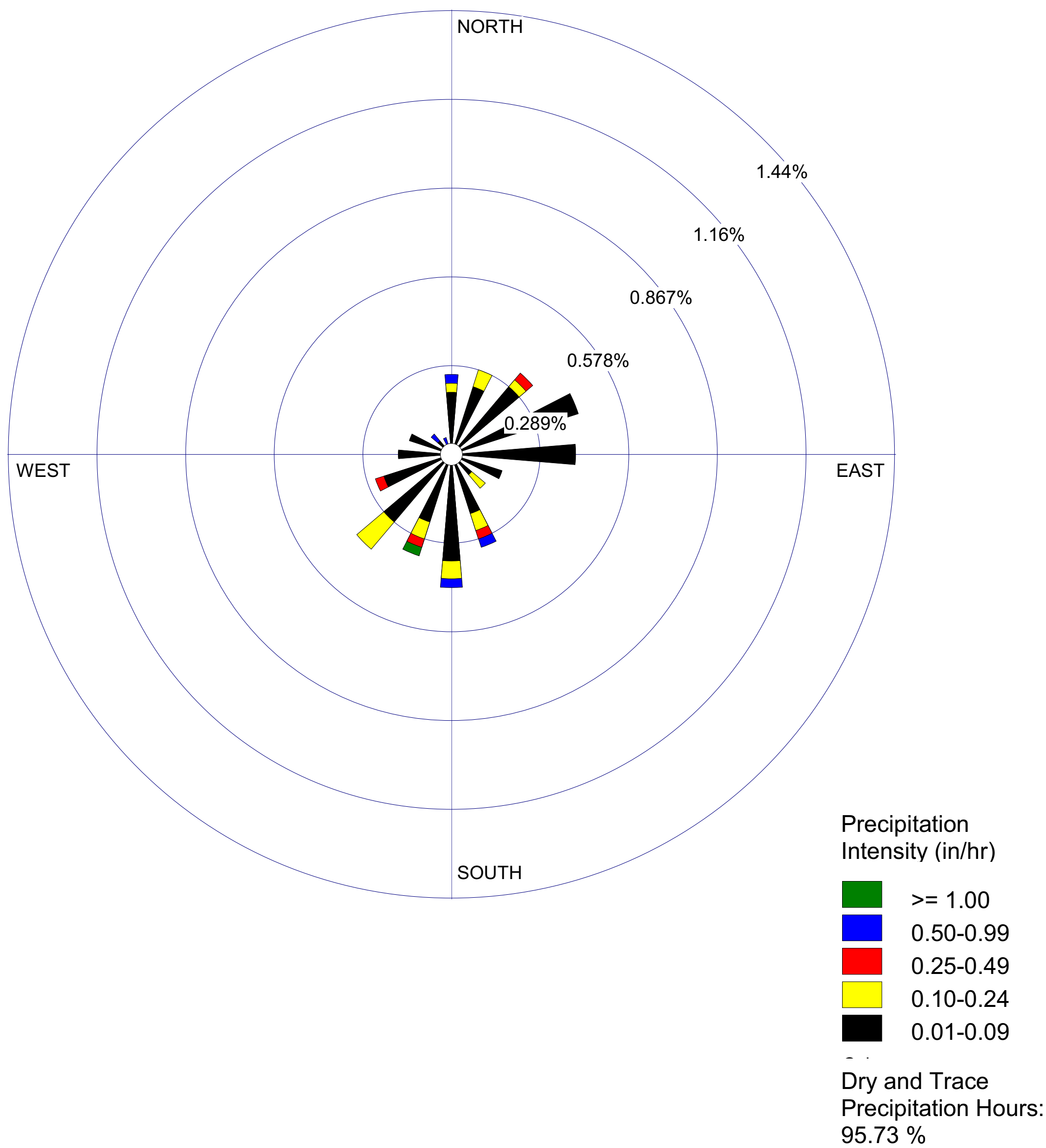
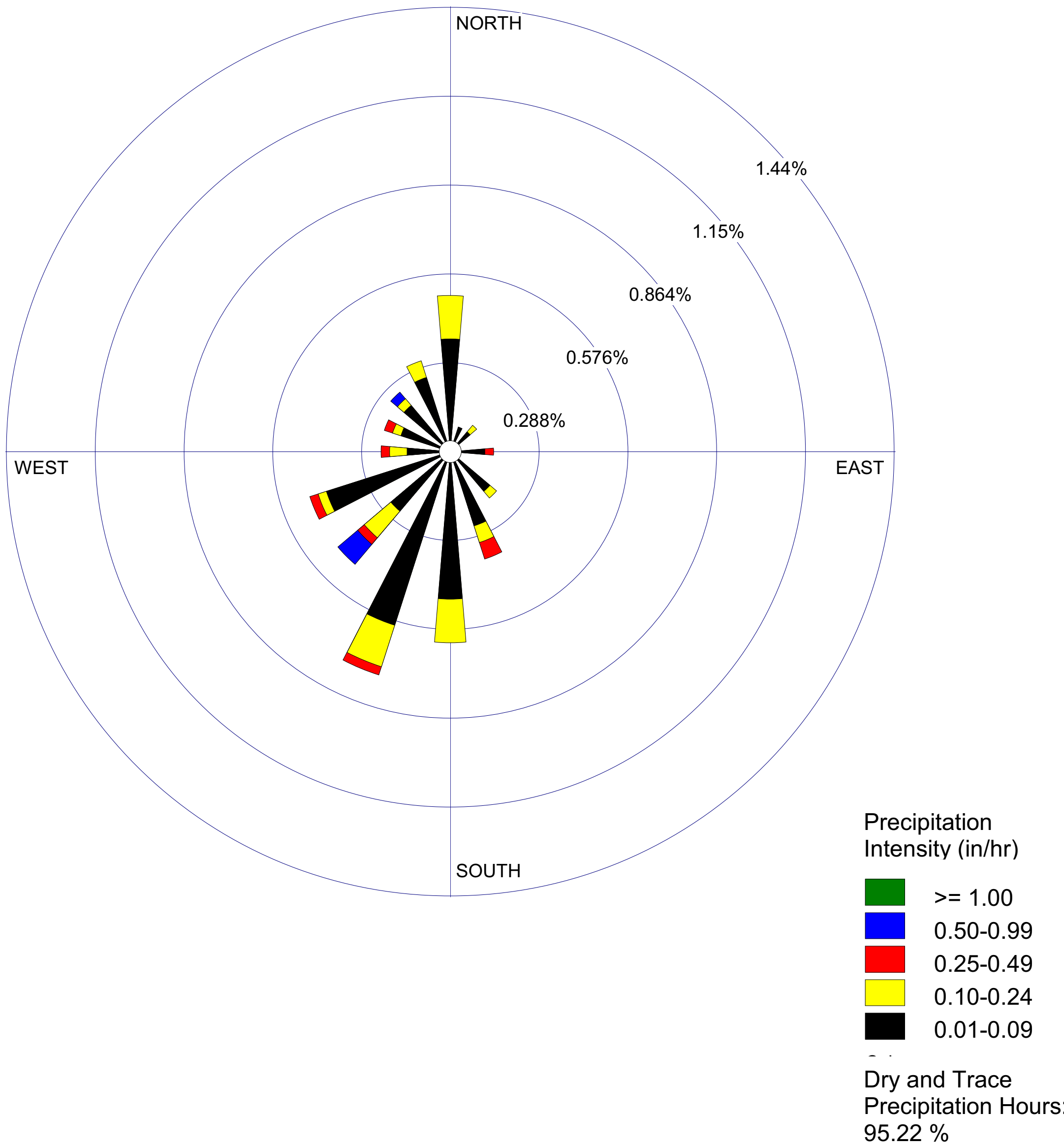
**Figure 2.7-10 Detroit Metropolitan Airport June Precipitation Rose (2003-2007)**



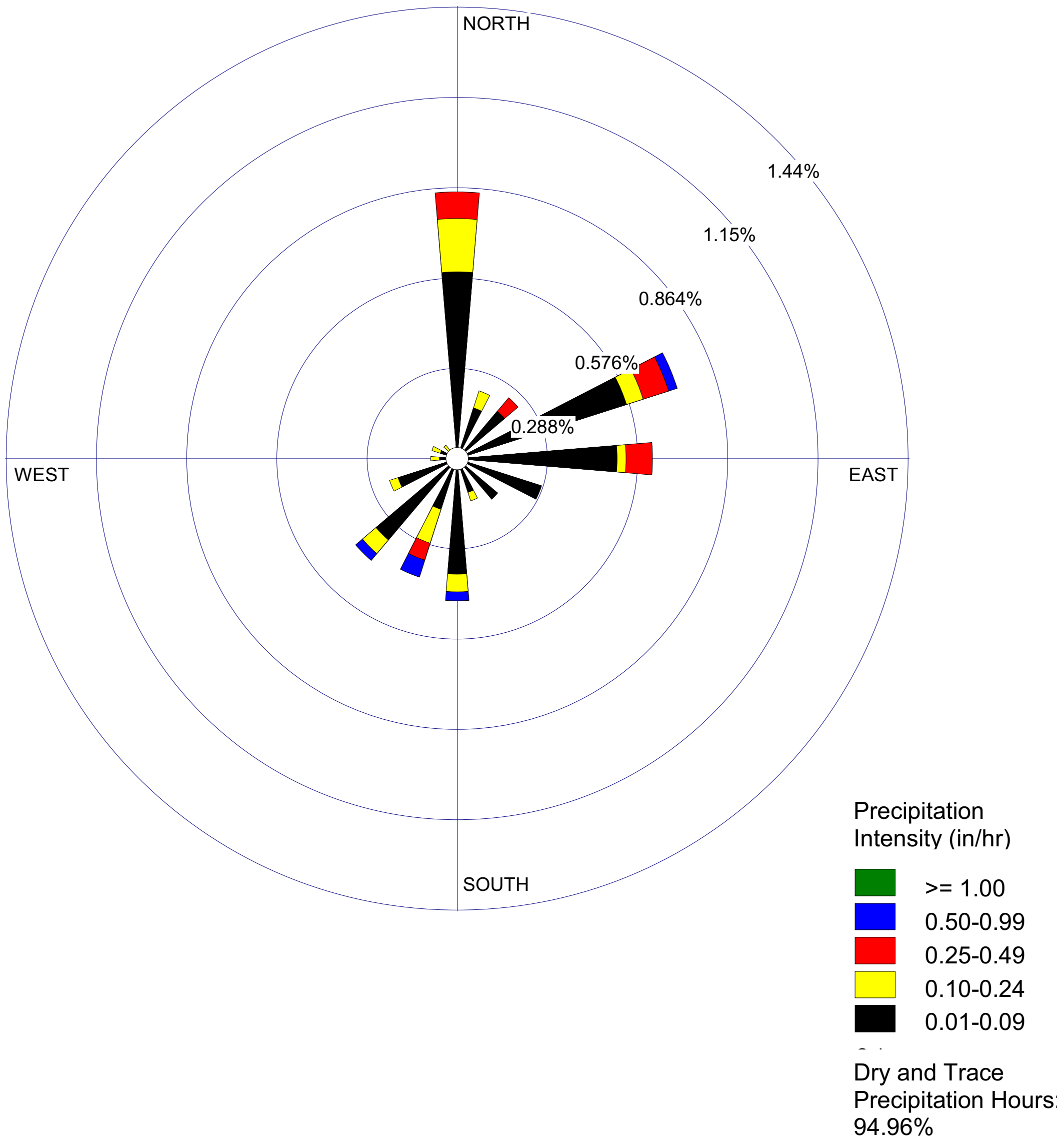

Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-11 Detroit Metropolitan Airport July Precipitation Rose (2003-2007)**



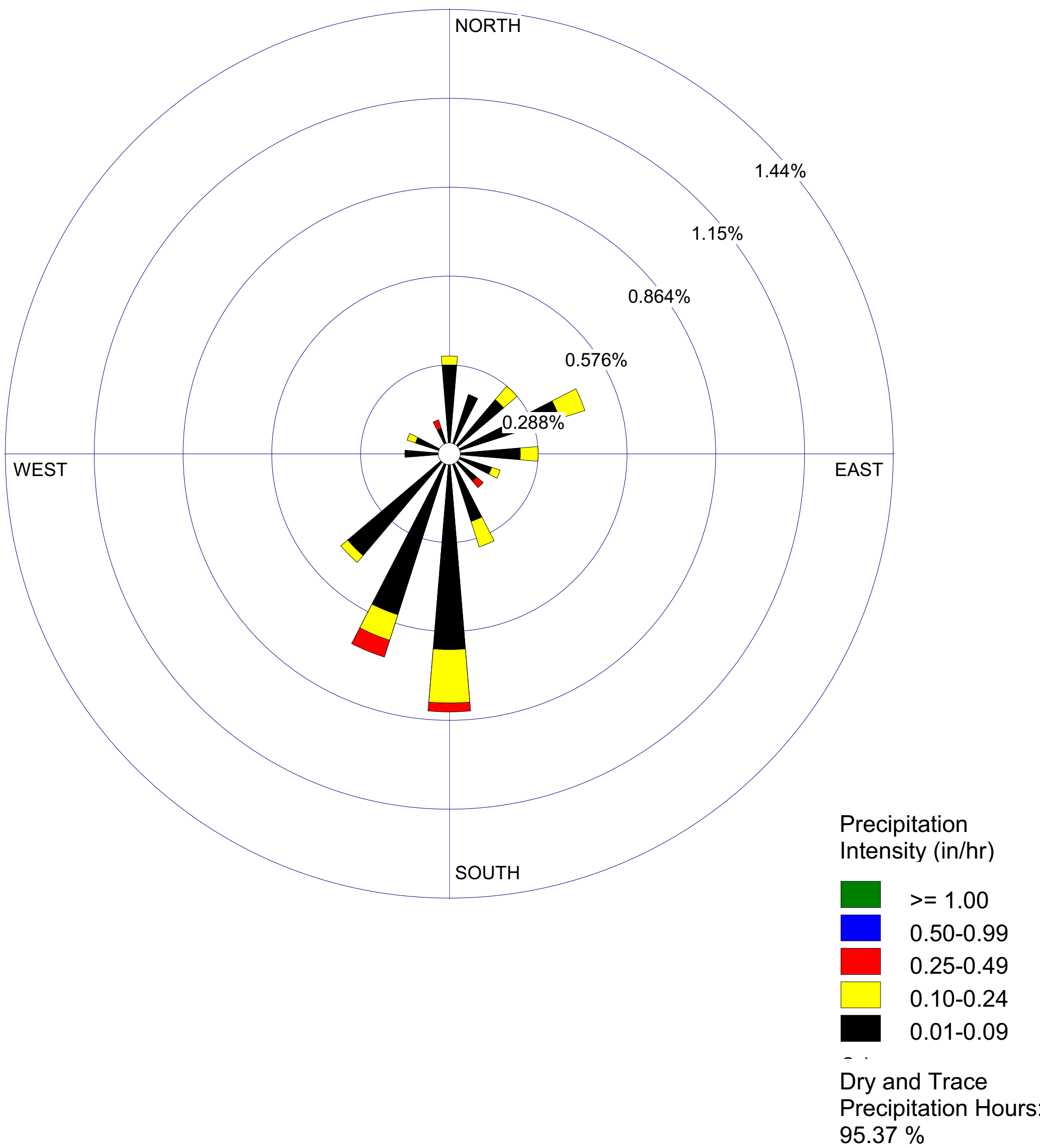

Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-12 Detroit Metropolitan Airport August Precipitation Rose (2003-2007)**



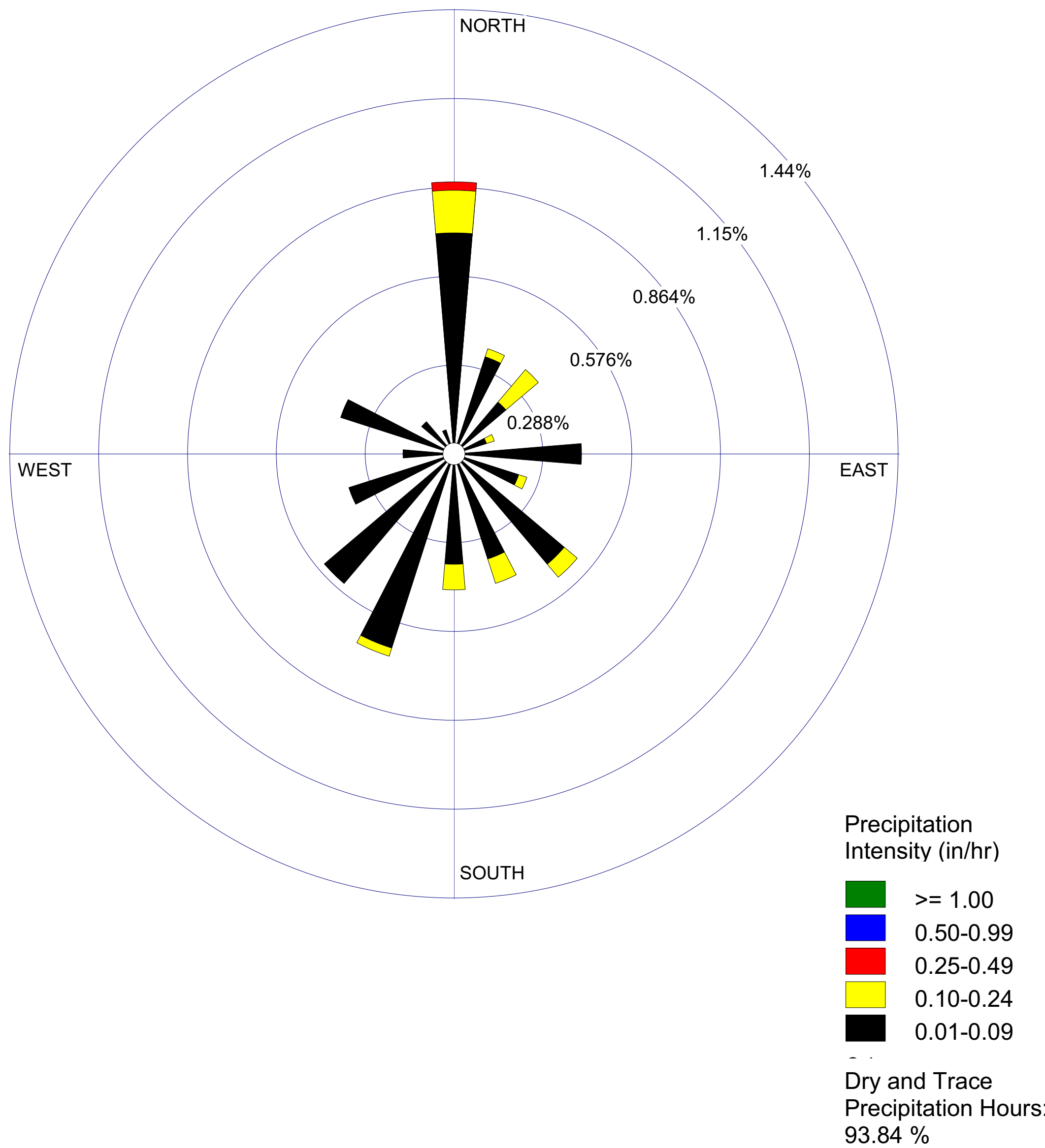

Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-13 Detroit Metropolitan Airport September Precipitation Rose (2003-2007)**



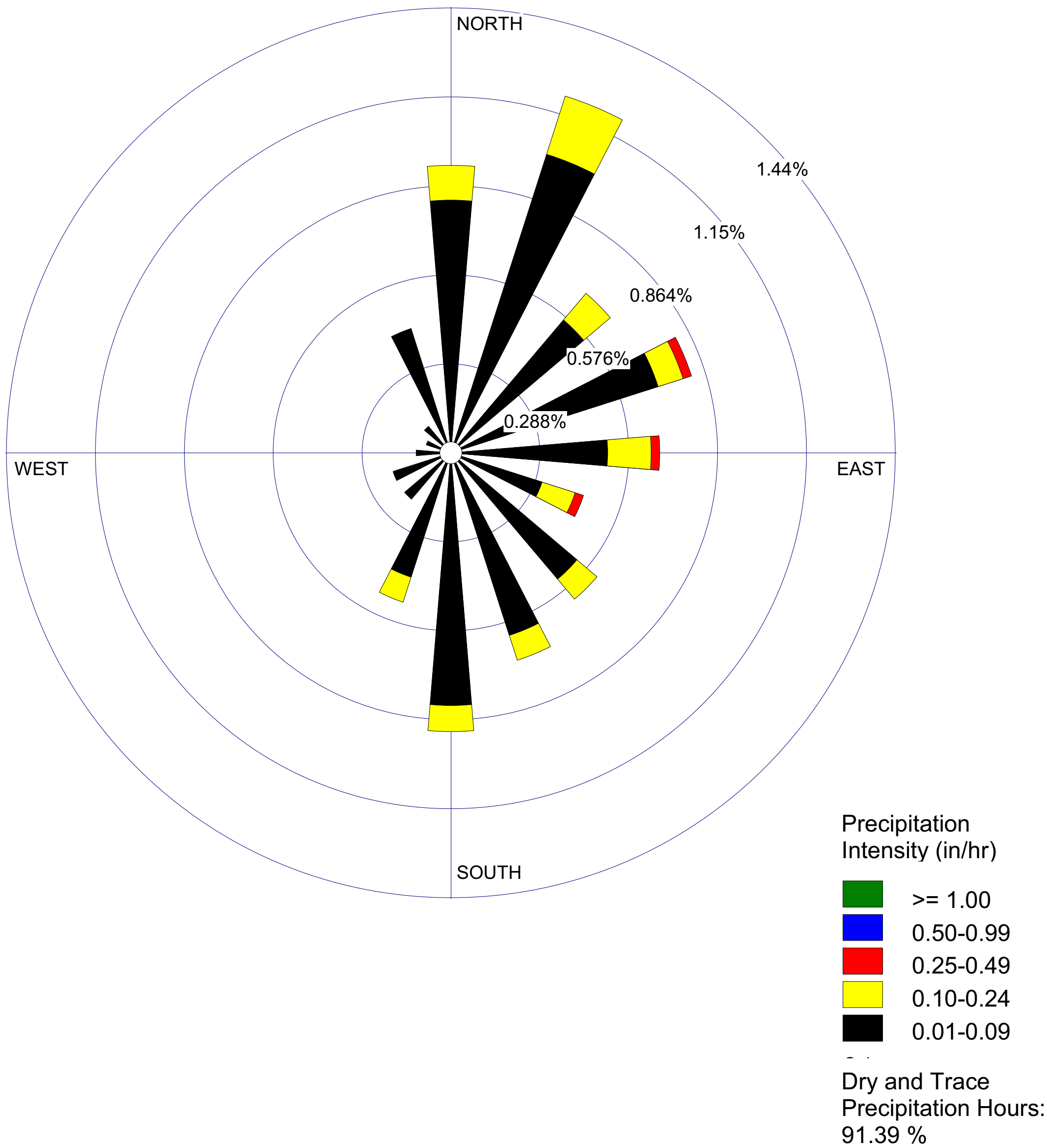

Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-14 Detroit Metropolitan Airport October Precipitation Rose (2003-2007)**




Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-15 Detroit Metropolitan Airport November Precipitation Rose (2003-2007)**

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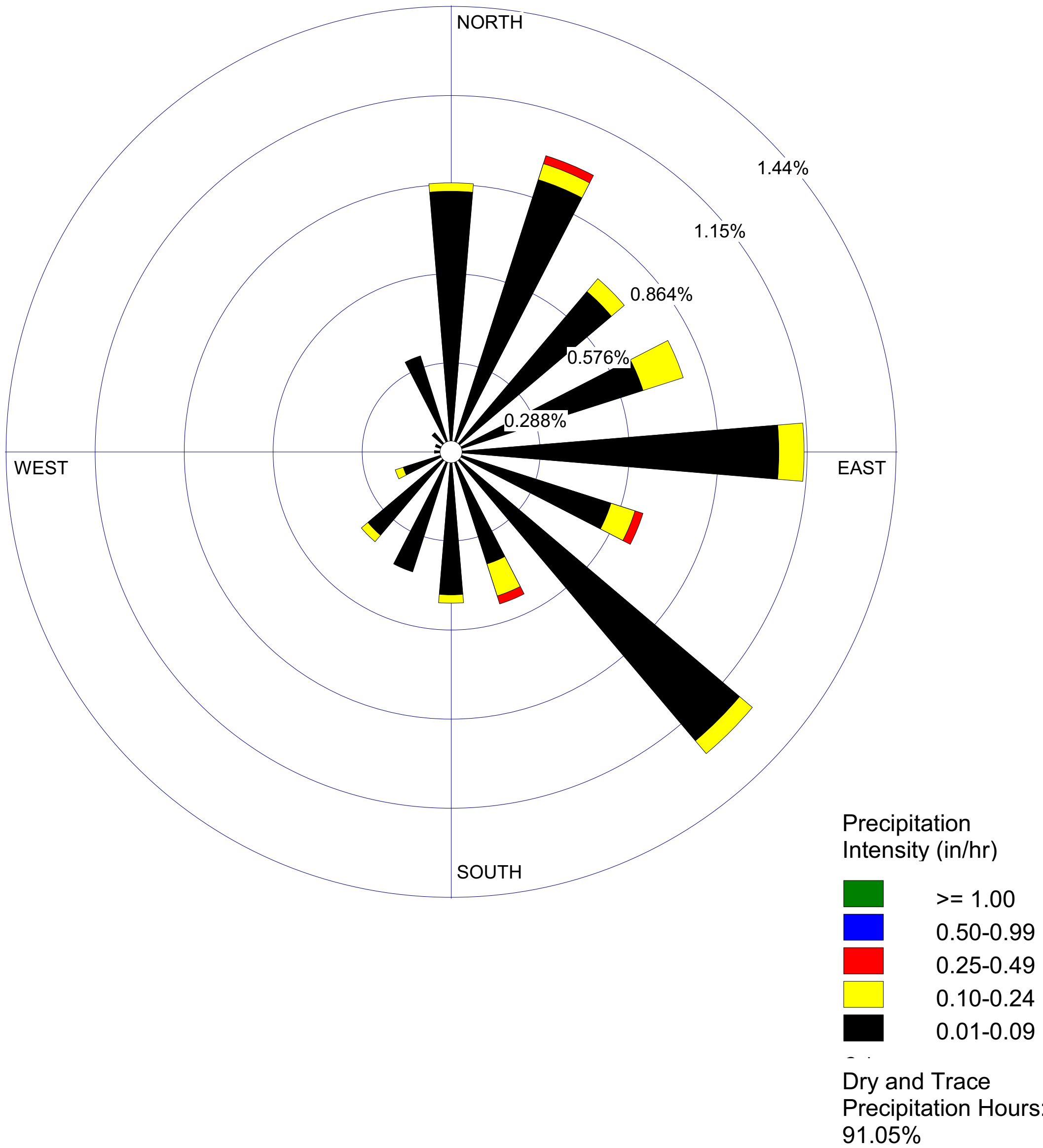
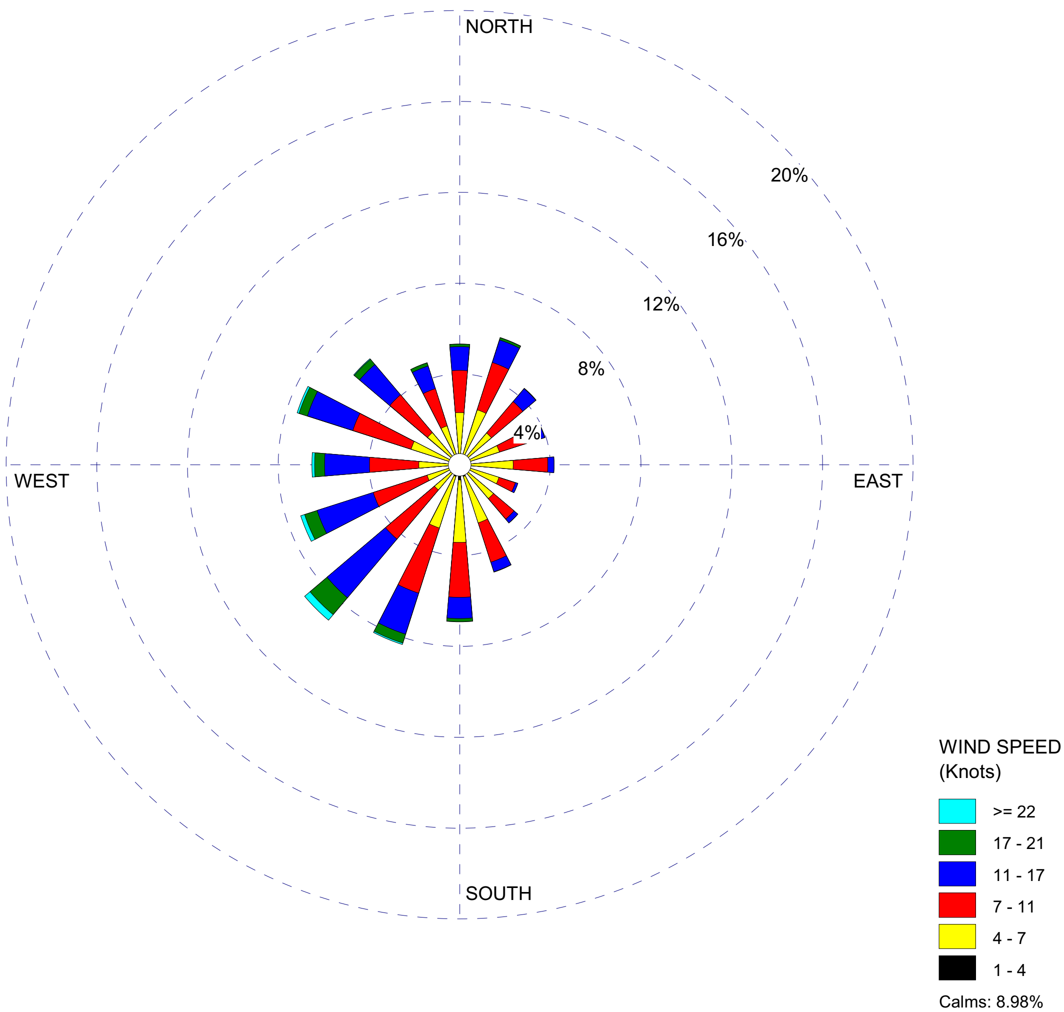
## Figure 2.7-16 Detroit Metropolitan Airport December Precipitation Rose (2003-2007)




Source: Reference 2.7-41 and Reference 2.7-44

**Figure 2.7-17 Detroit Metropolitan Airport Annual Wind Rose (2003-2007)**




Source: Reference 2.7-41

## Figure 2.7-18 Detroit Metropolitan Airport January Wind Rose (2003-2007)

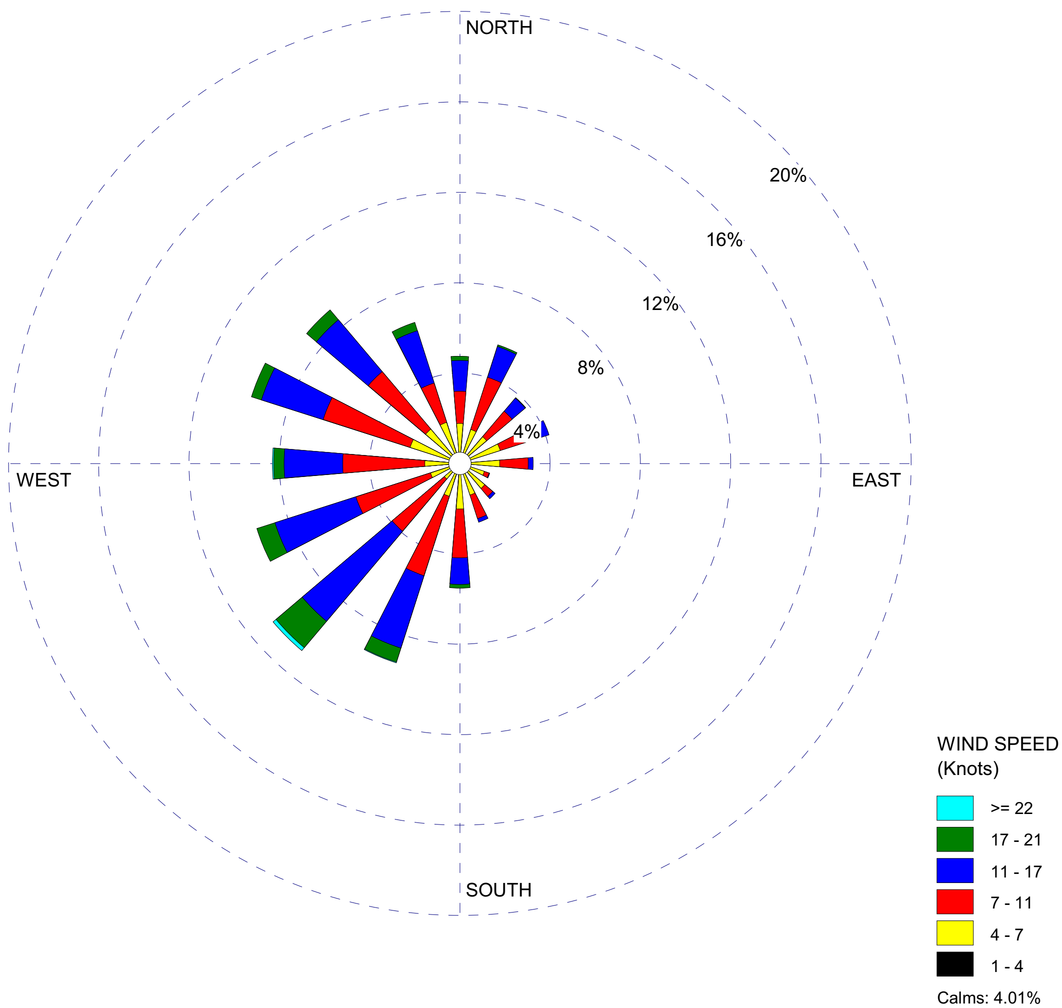



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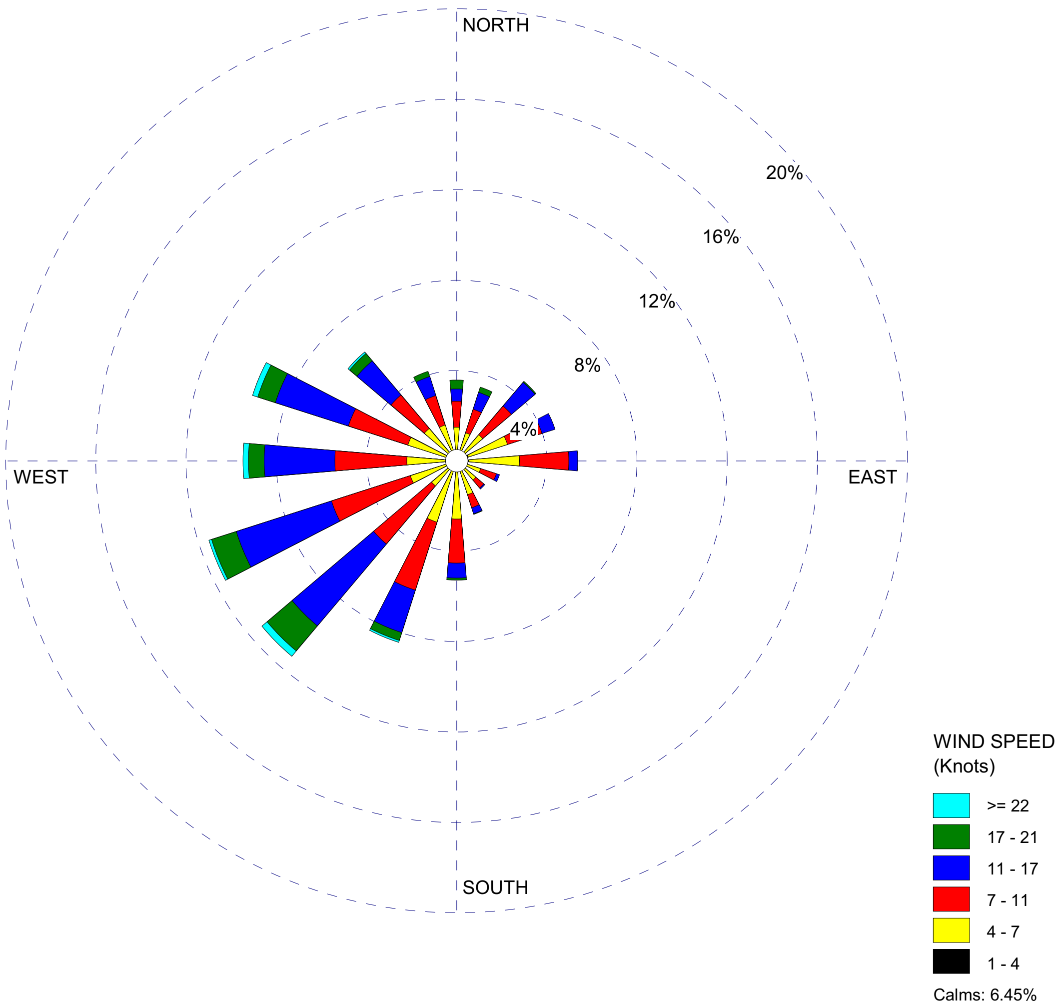
**Figure 2.7-19 Detroit Metropolitan Airport February Wind Rose (2003-2007)**




Source: Reference 2.7-41

## Figure 2.7-20 Detroit Metropolitan Airport March Wind Rose (2003-2007)

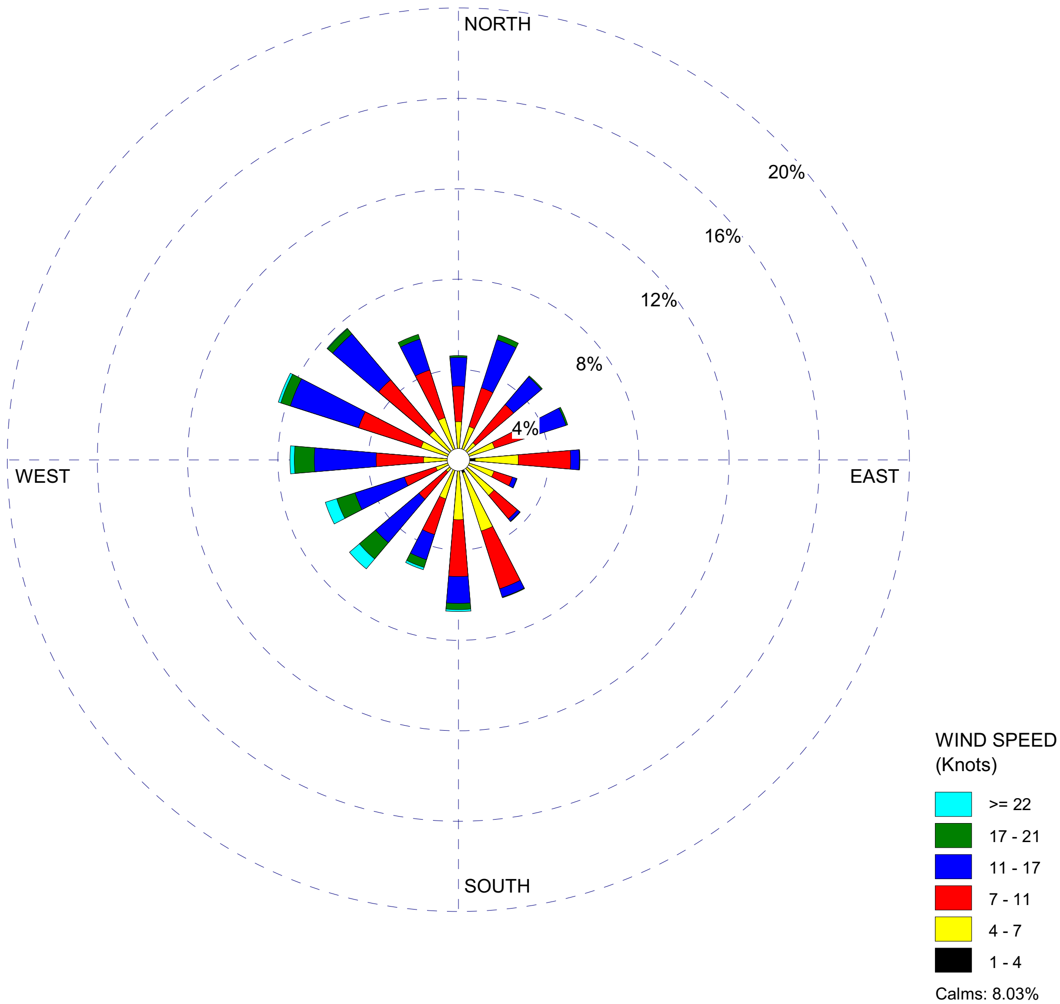



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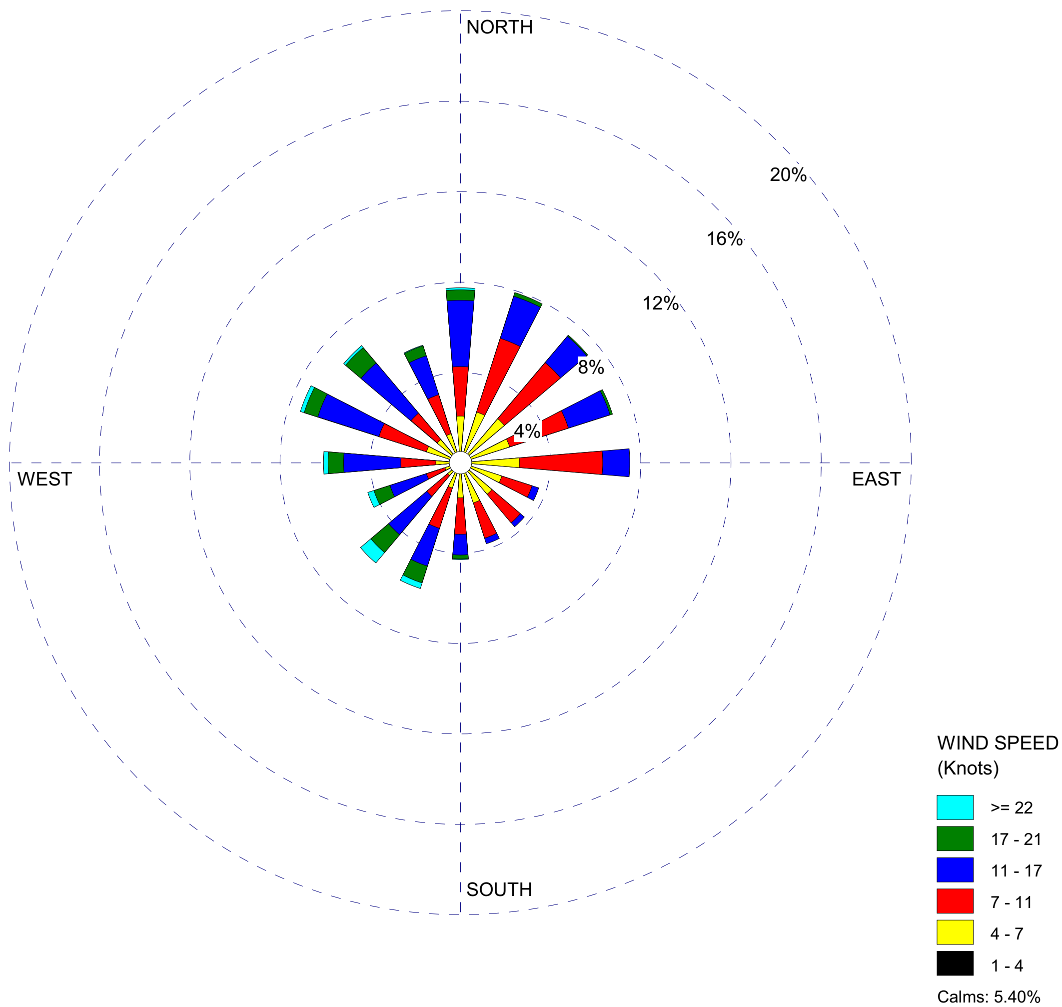
**Figure 2.7-21 Detroit Metropolitan Airport April Wind Rose (2003-2007)**

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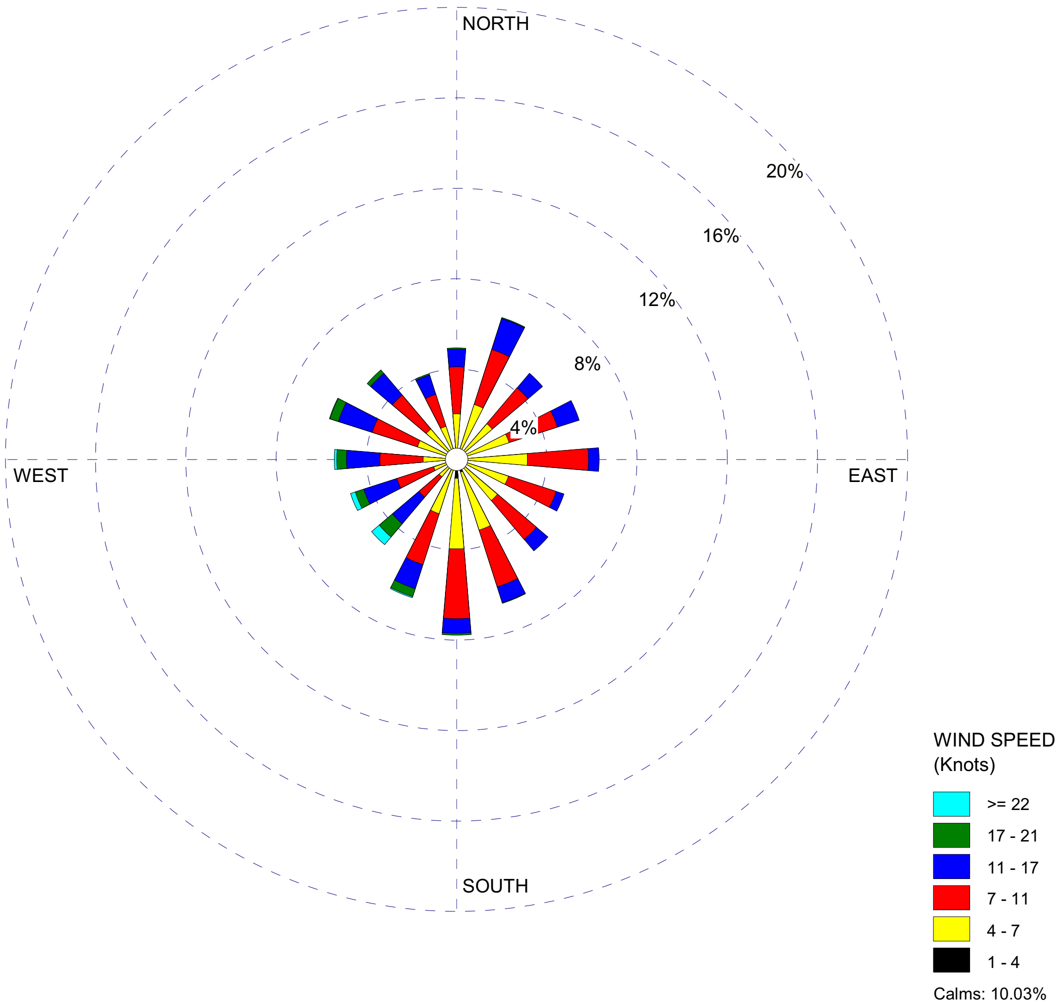
## Figure 2.7-22 Detroit Metropolitan Airport May Wind Rose (2003-2007)

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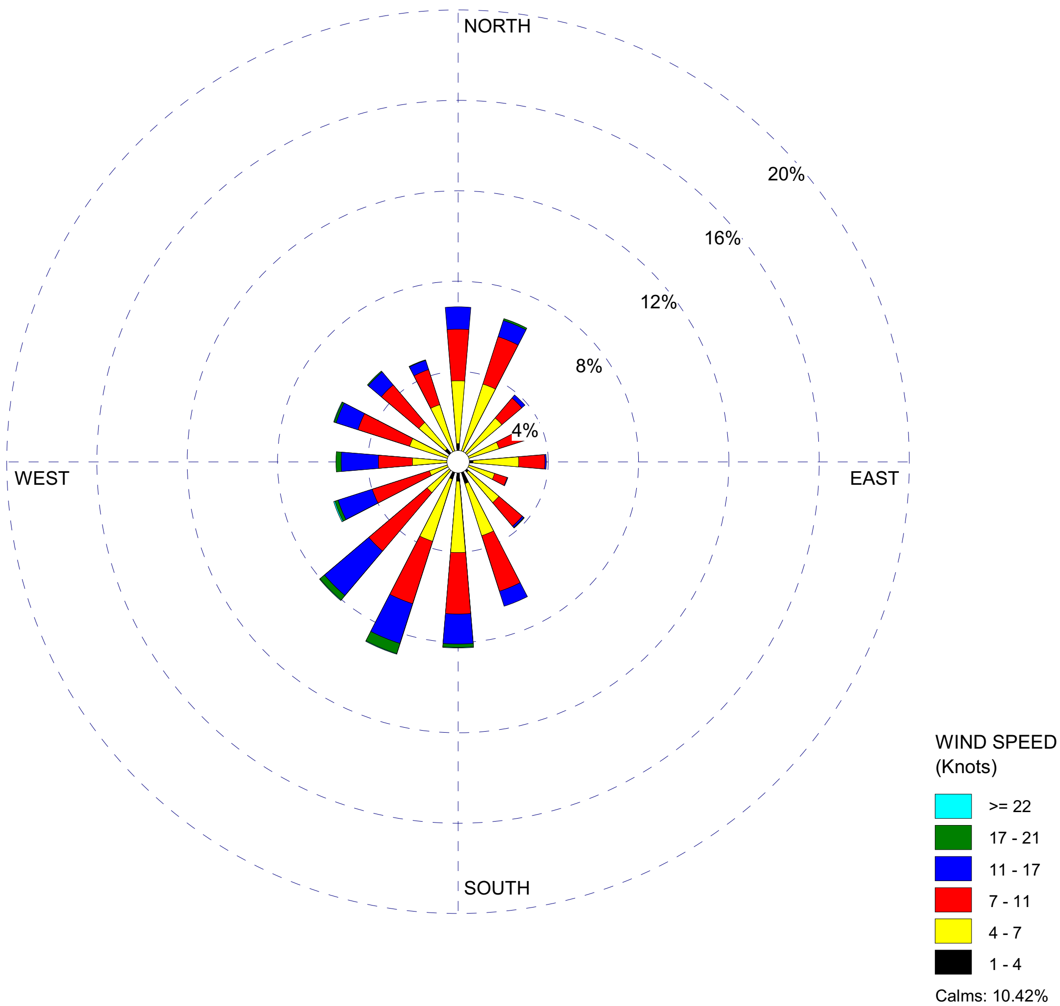
## Figure 2.7-23 Detroit Metropolitan Airport June Wind Rose (2003-2007)




Source: Reference 2.7-41

## Figure 2.7-24 Detroit Metropolitan Airport July Wind Rose (2003-2007)

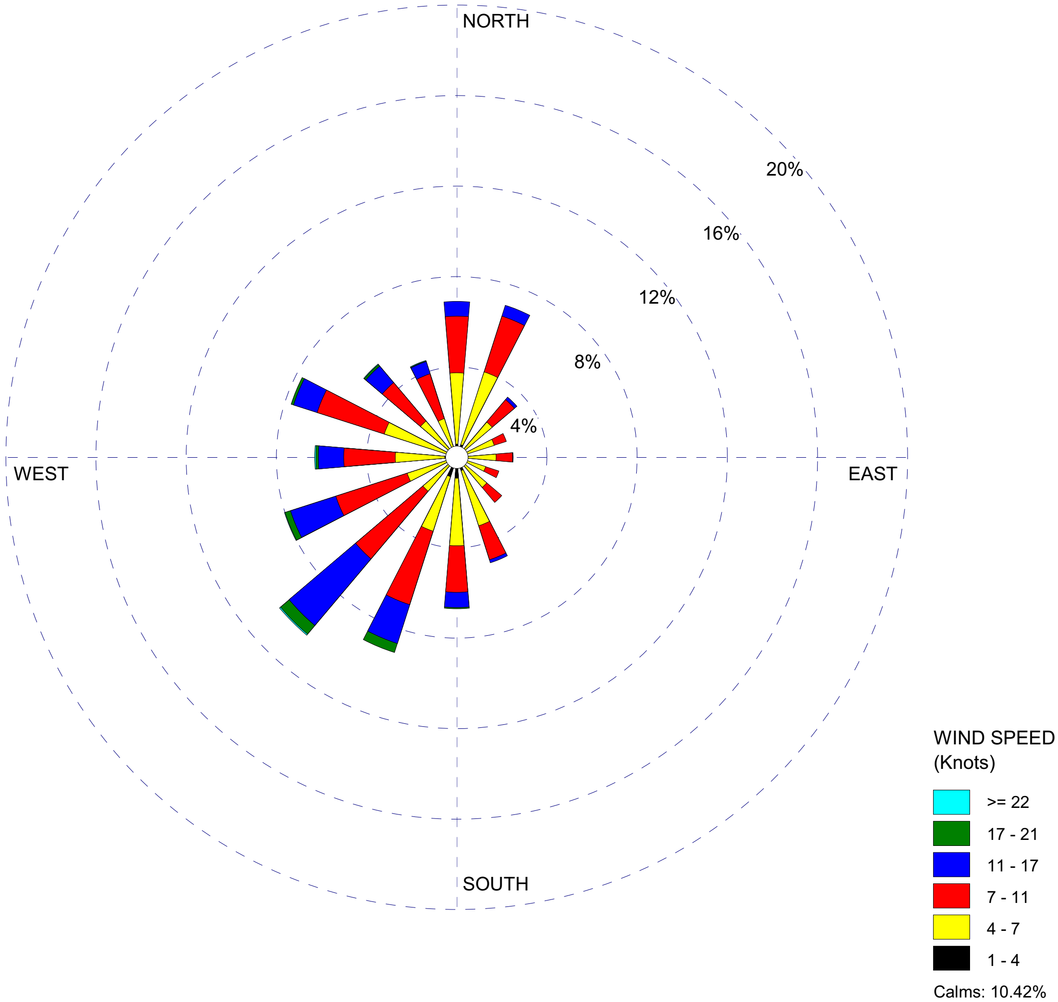



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**Figure 2.7-25  Detroit Metropolitan Airport August Wind Rose (2003-2007)**

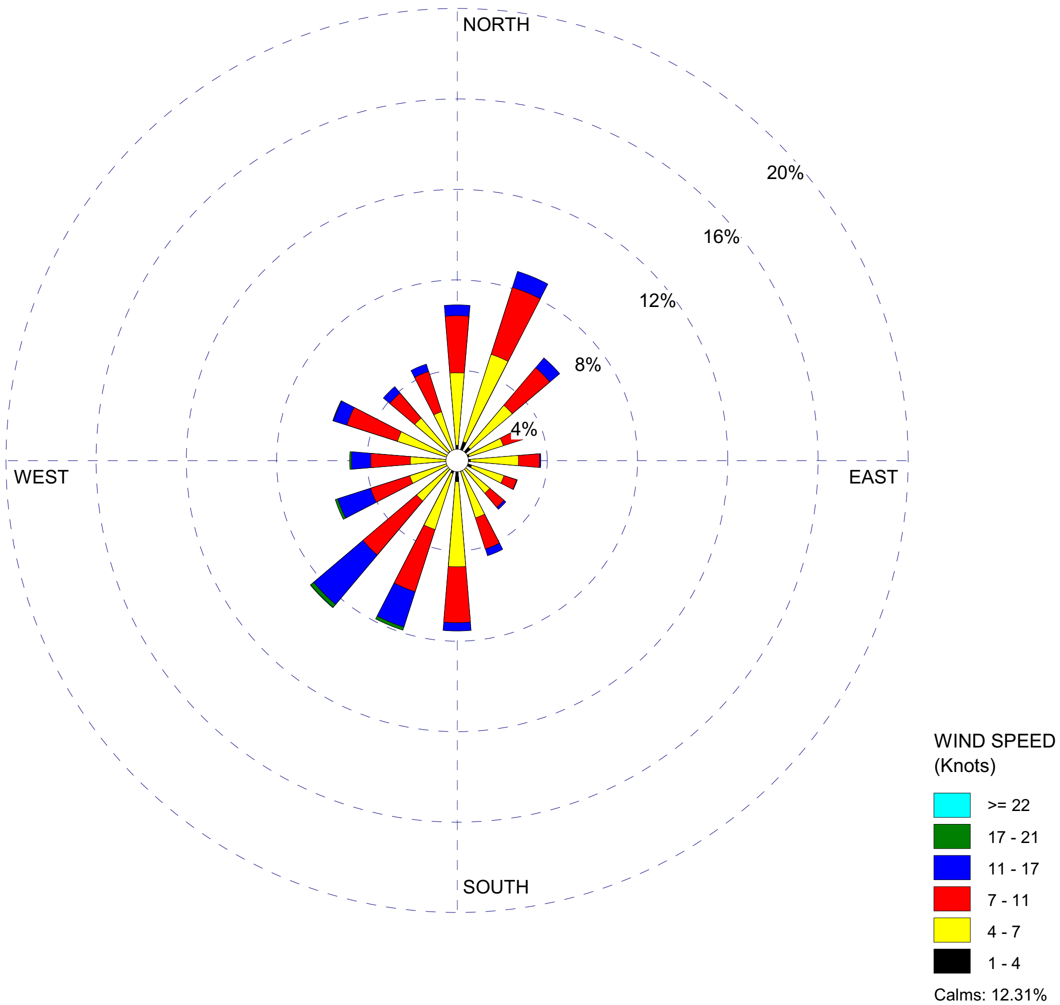


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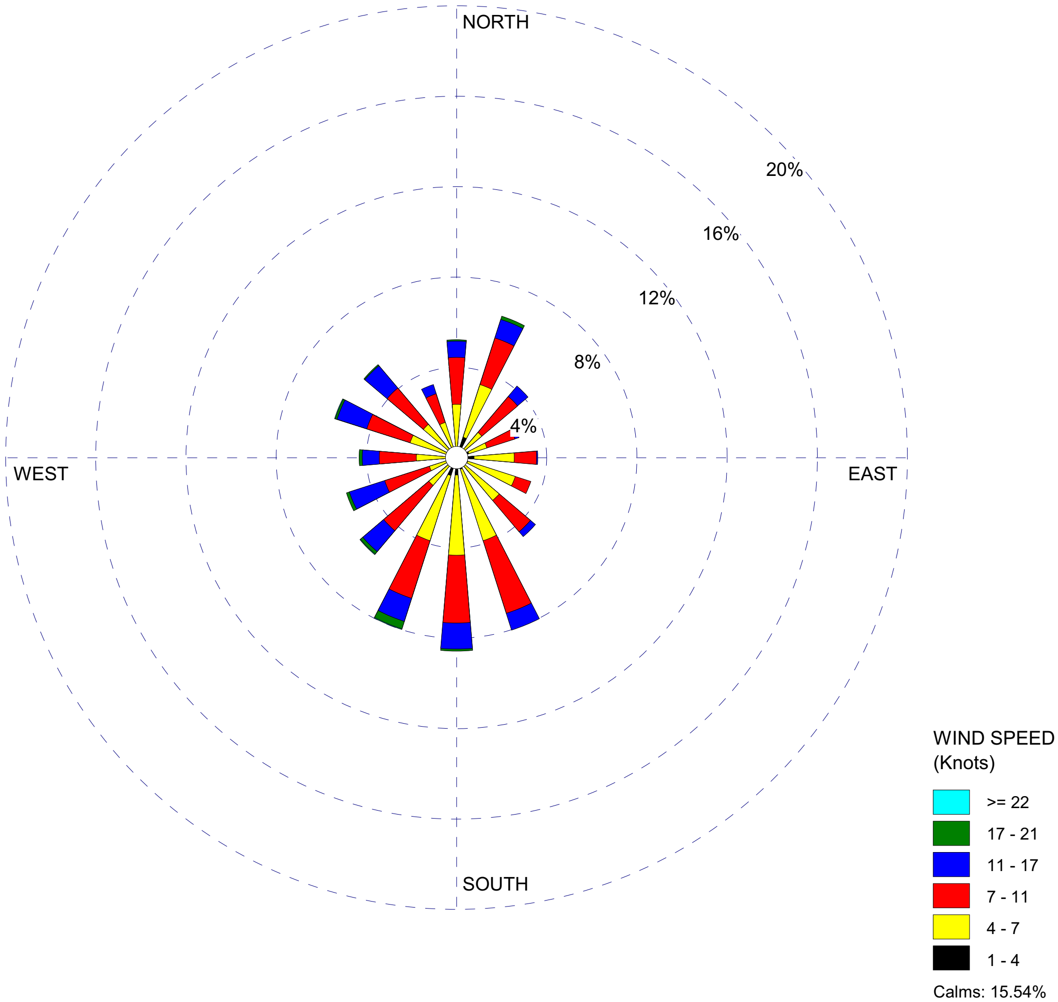
**Figure 2.7-26 Detroit Metropolitan Airport September Wind Rose (2003-2007)**

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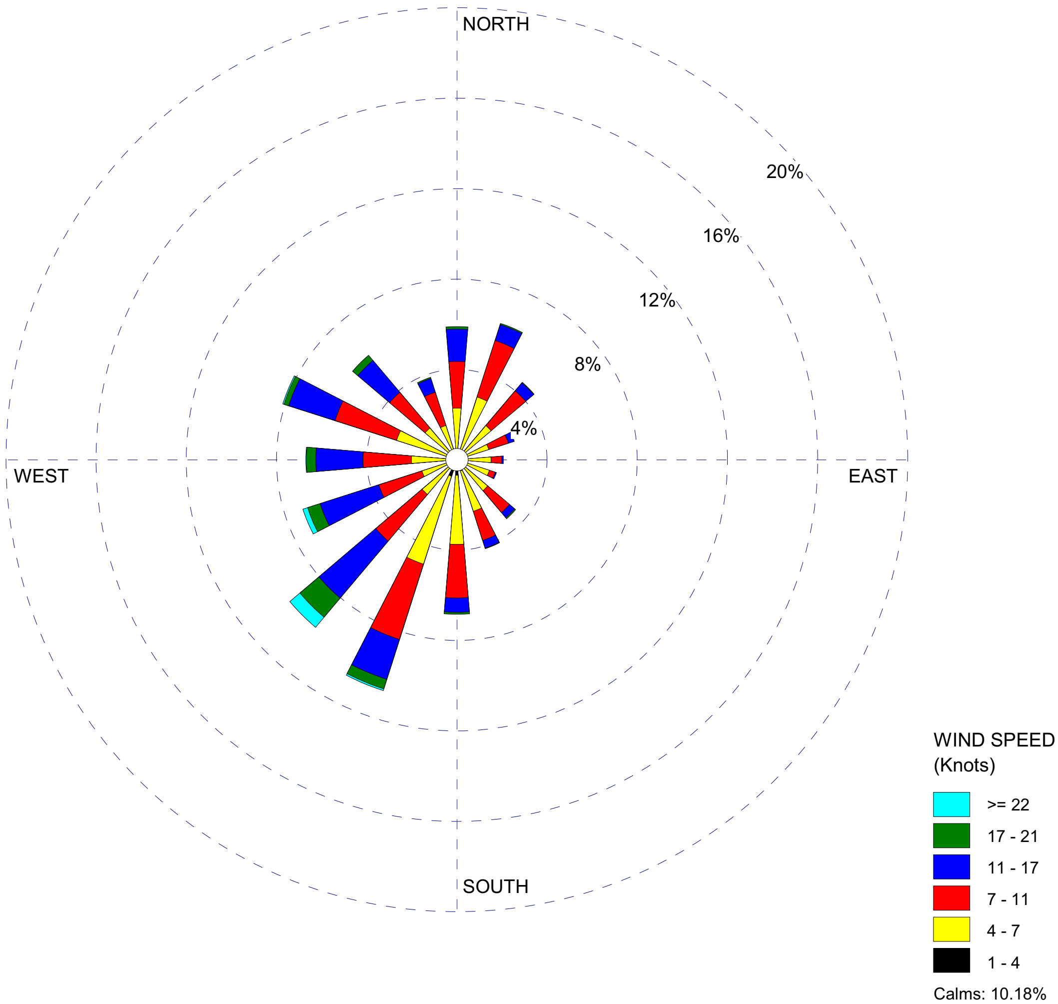
## Figure 2.7-27 Detroit Metropolitan Airport October Wind Rose (2003-2007)

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## Figure 2.7-28 Detroit Metropolitan Airport November Wind Rose (2003-2007)

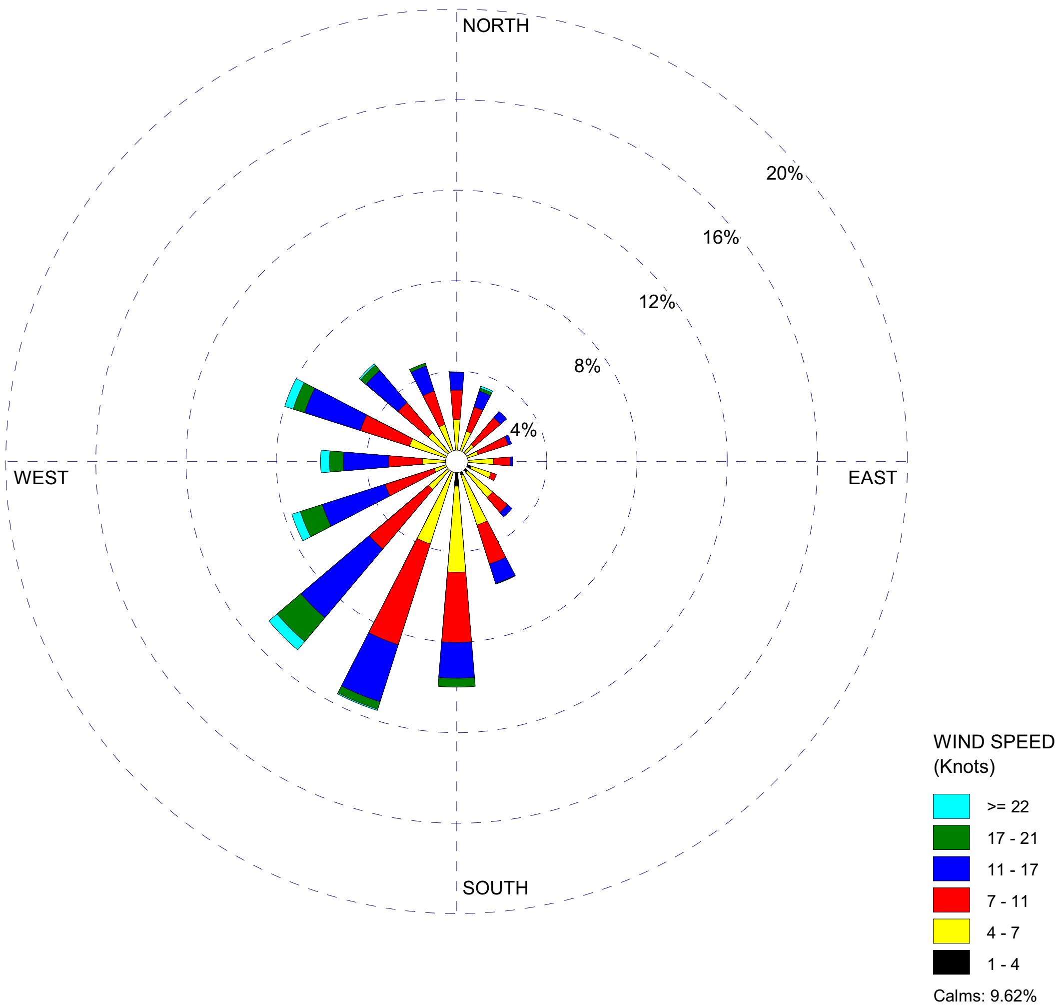


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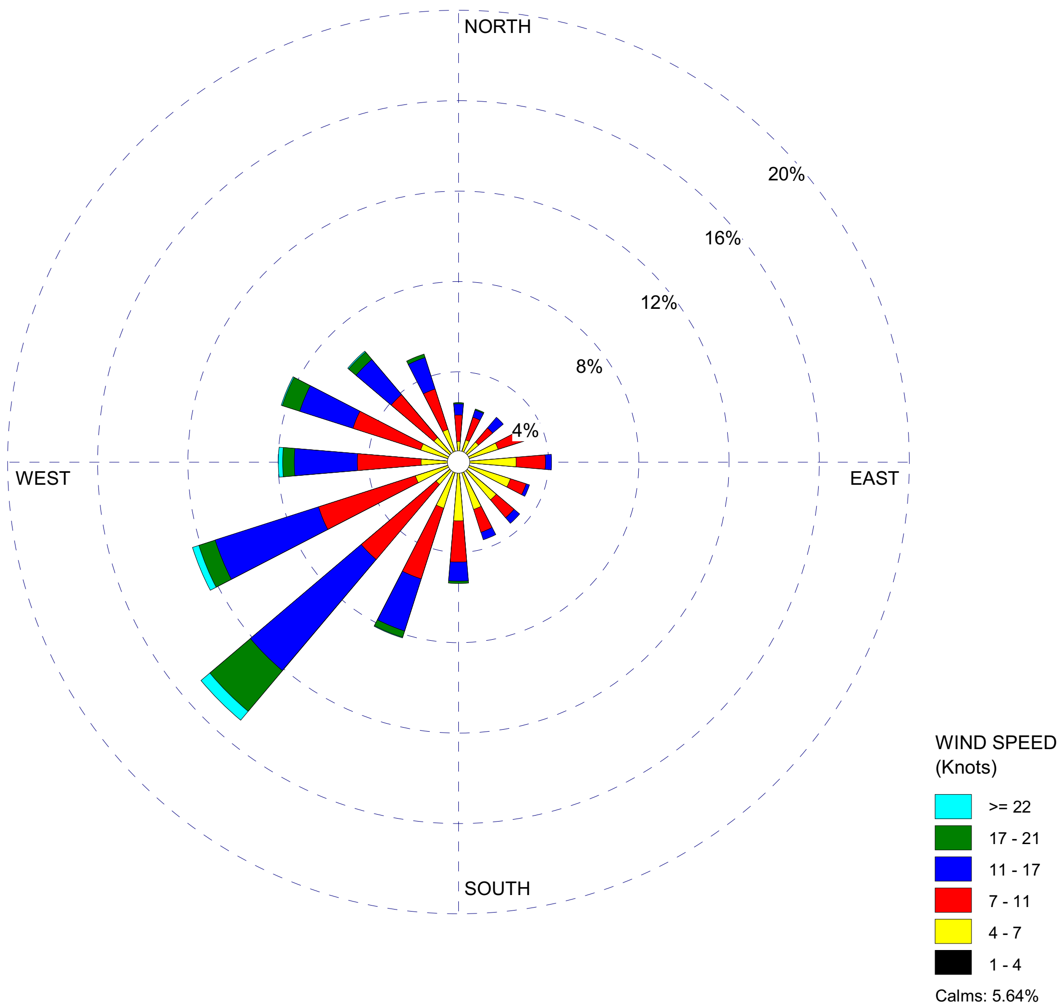
**Figure 2.7-29 Detroit Metropolitan Airport December Wind Rose (2003-2007)**

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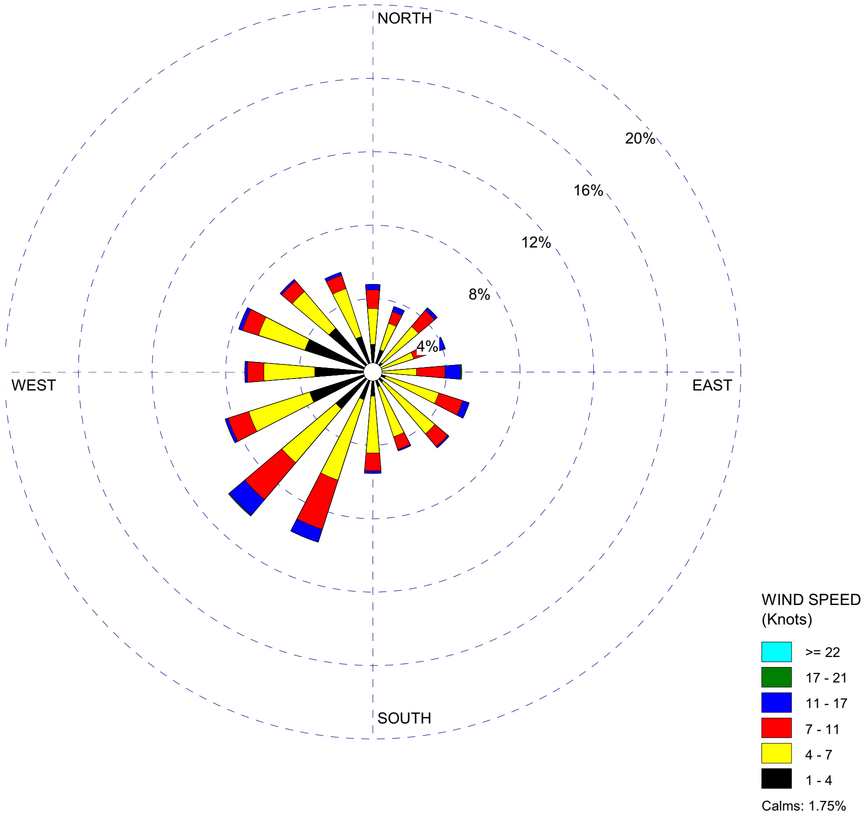
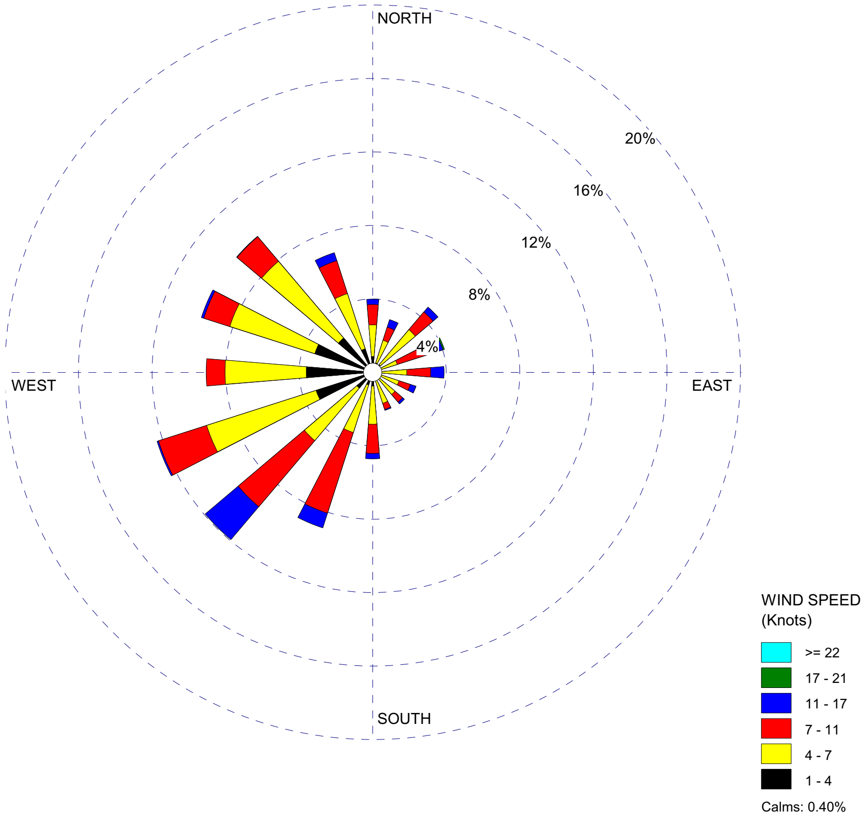
## Figure 2.7-30 Fermi Site 10-Meter Annual Wind Rose (2003-2007)



## Figure 2.7-31 Fermi Site 10-Meter January Wind Rose (2003-2007)



## Figure 2.7-32 Fermi Site 10-Meter February Wind Rose (2003-2007)

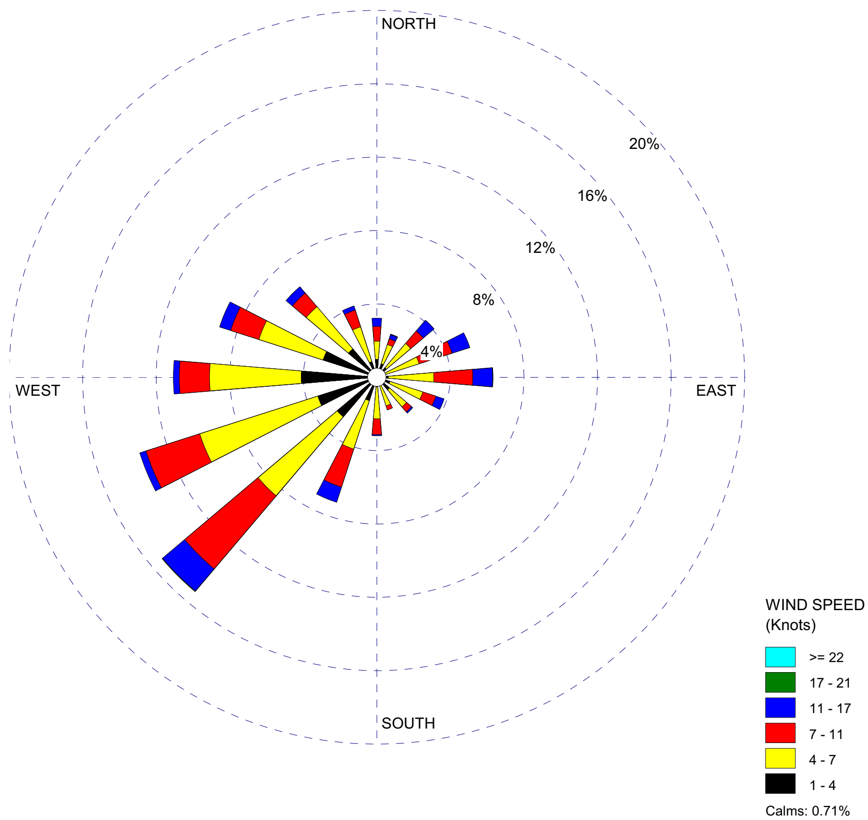
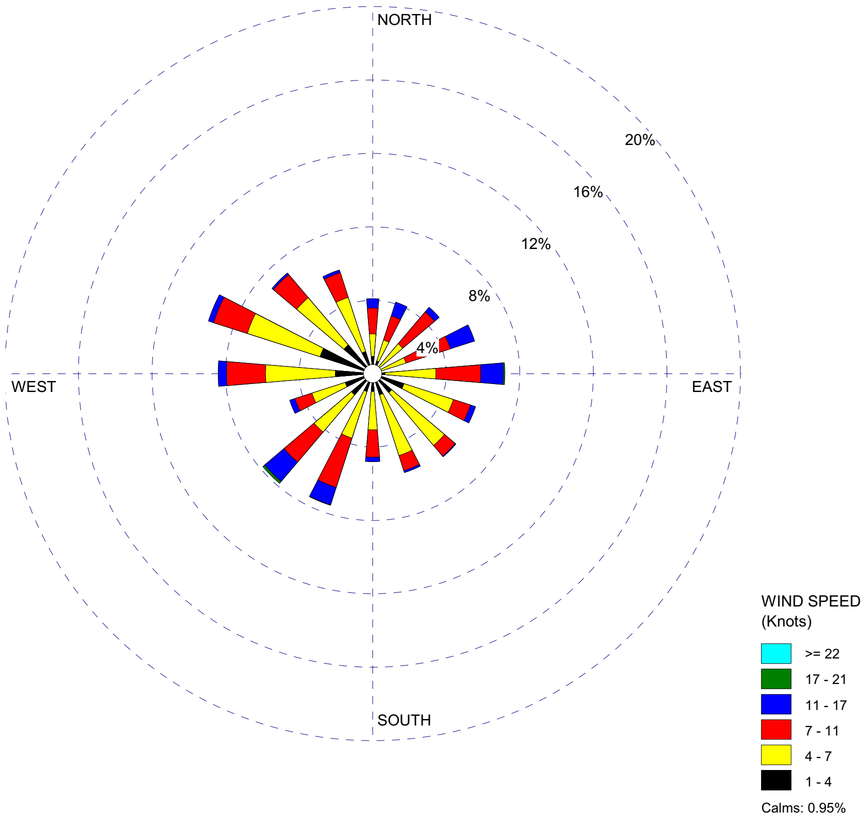
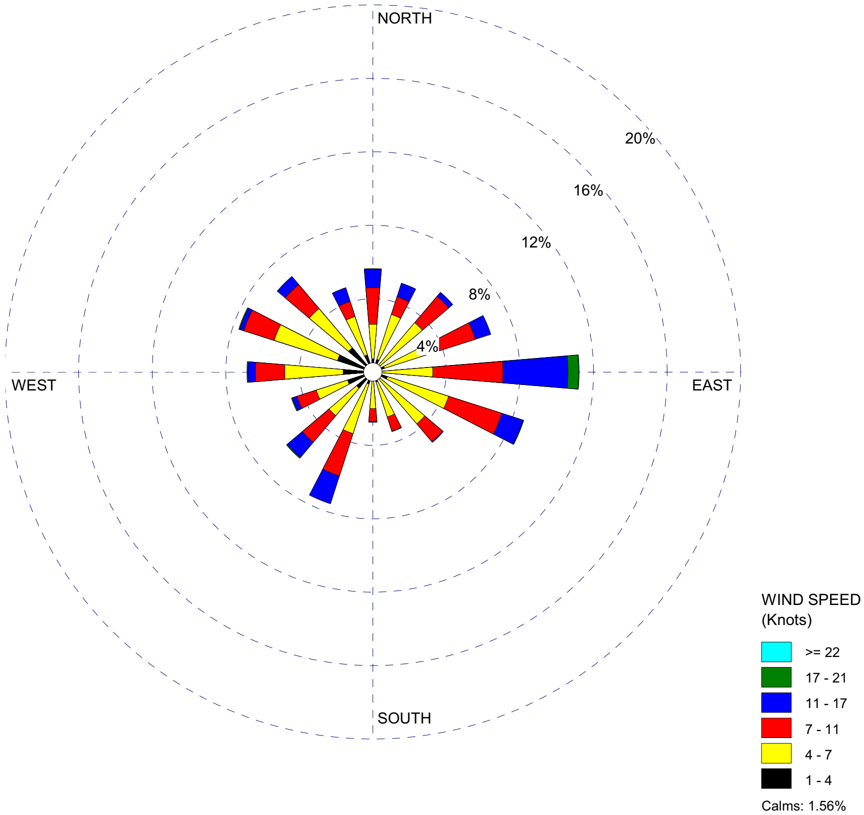


**Figure 2.7-33 Fermi Site 10-Meter March Wind Rose (2003-2007)**



## Figure 2.7-34 Fermi Site 10-Meter April Wind Rose (2003-2007)



## Figure 2.7-35 Fermi Site 10-Meter May Wind Rose (2003-2007)

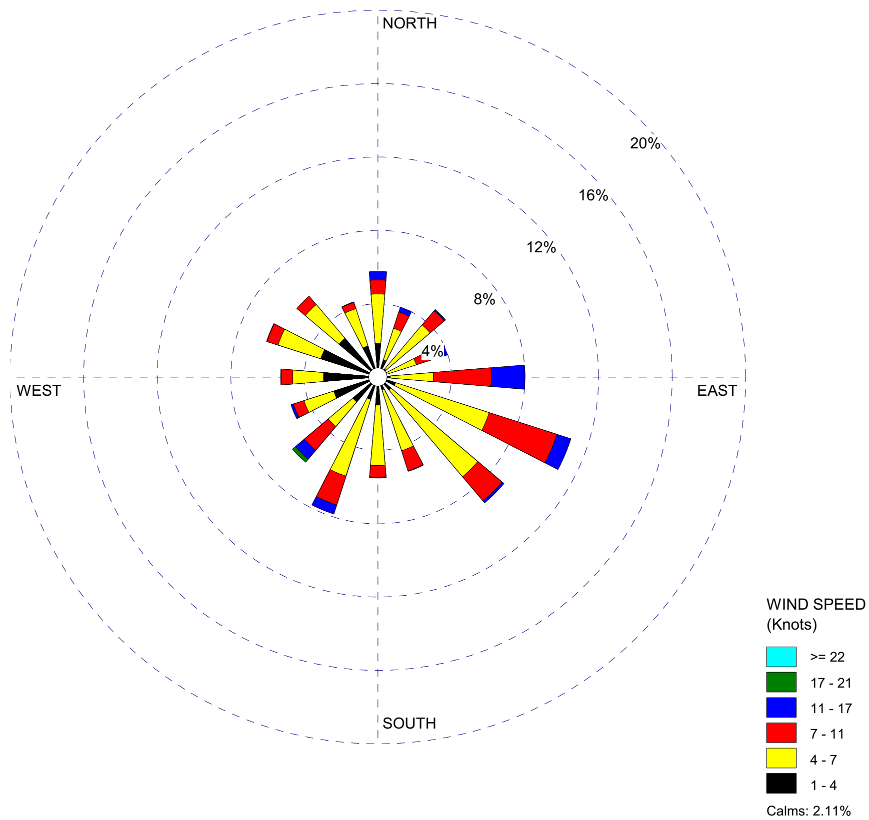
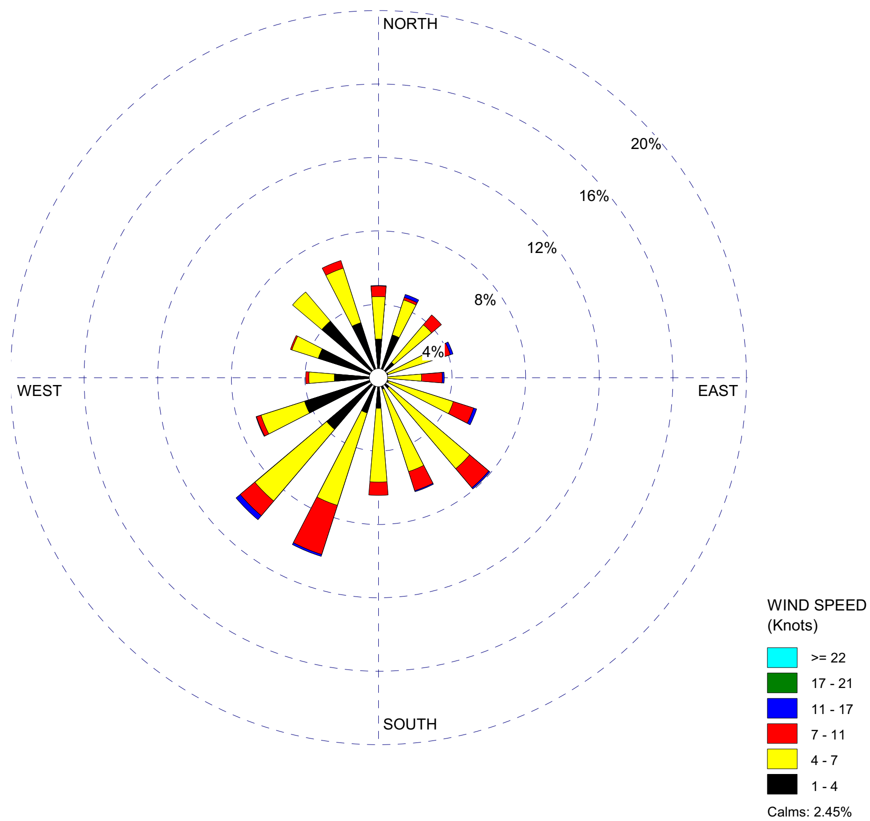
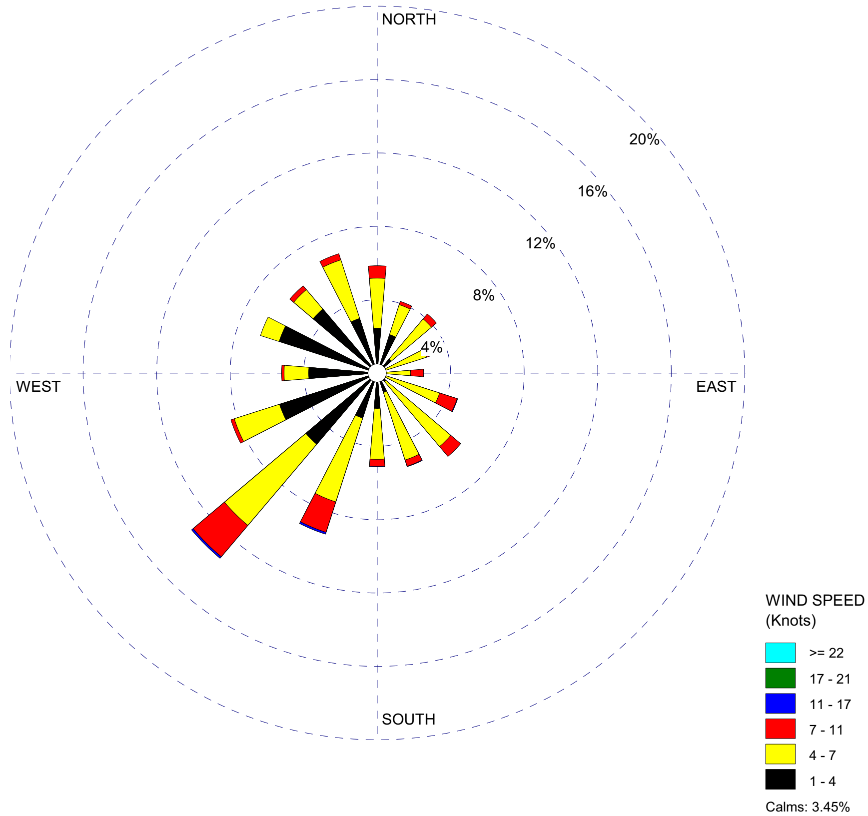


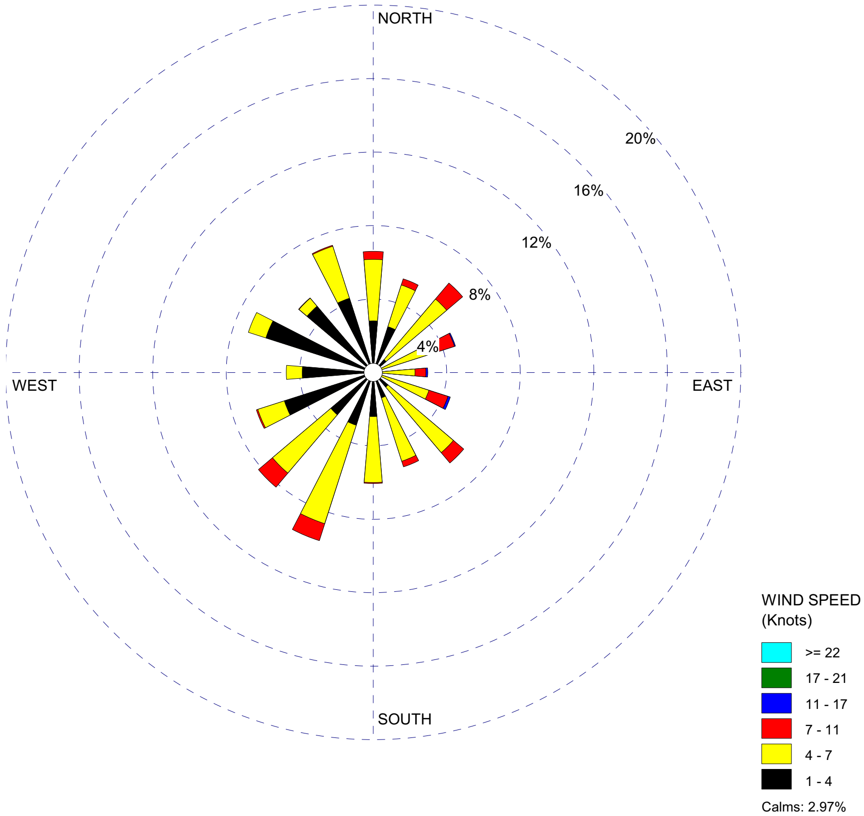
**Figure 2.7-36 Fermi Site 10-Meter June Wind Rose (2003-2007)**



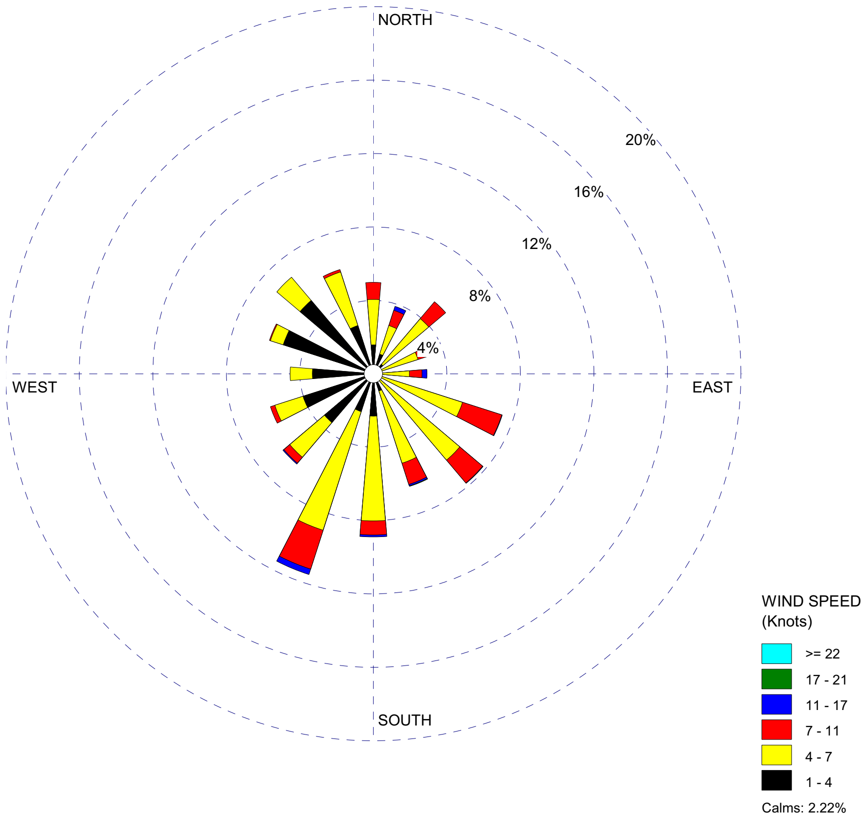
## Figure 2.7-37 Fermi Site 10-Meter July Wind Rose (2003-2007)



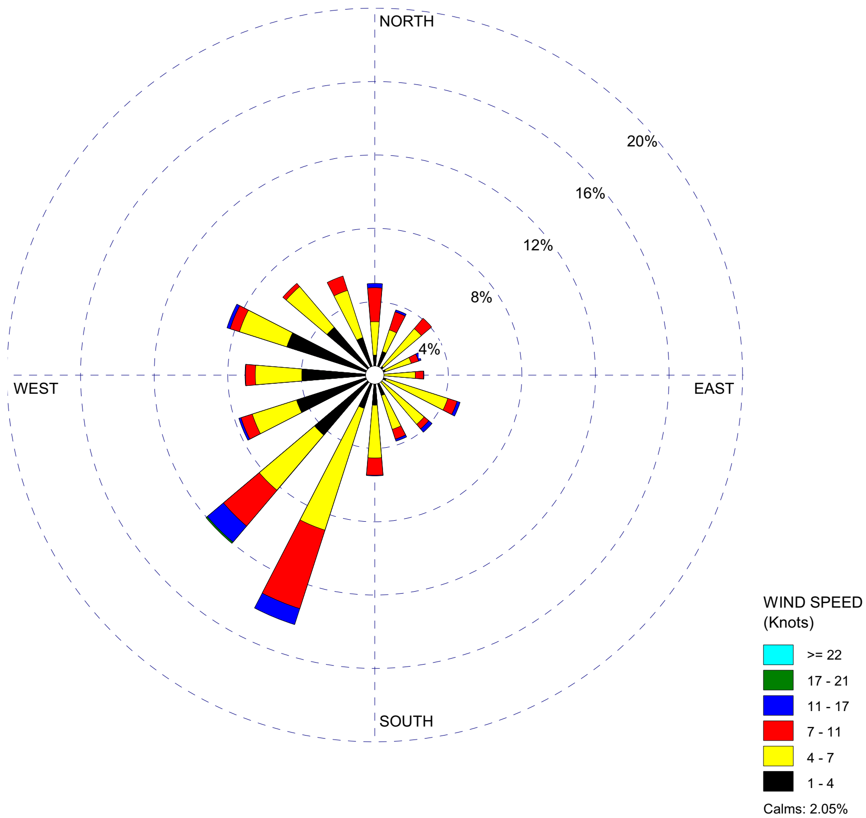
## Figure 2.7-38 Fermi Site 10-Meter August Wind Rose (2003-2007)



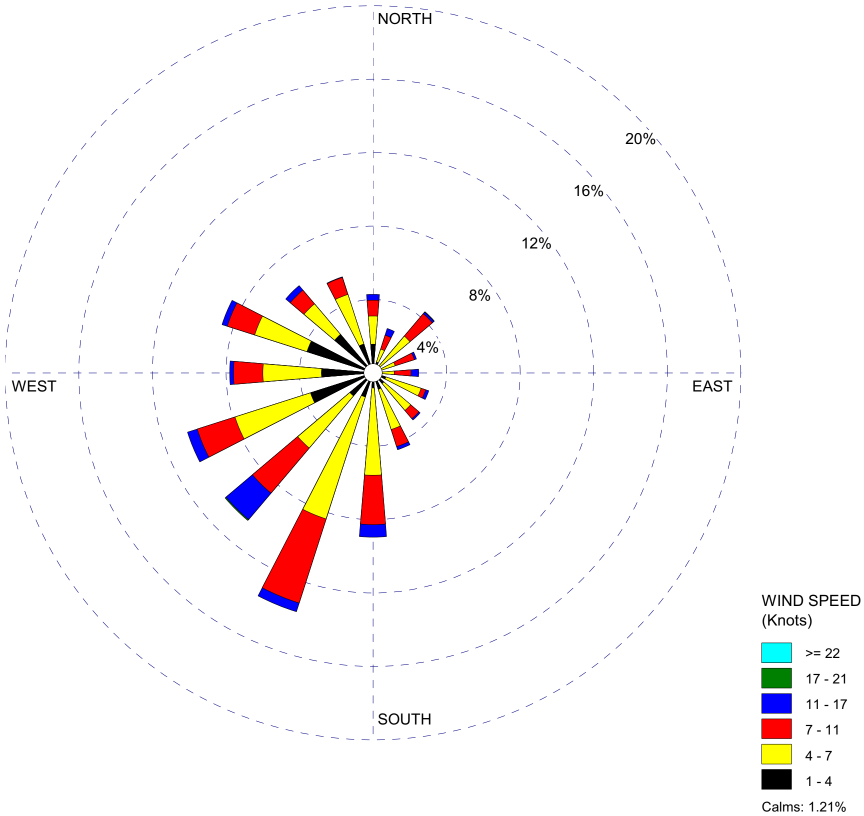
## Figure 2.7-39 Fermi Site 10-Meter September Wind Rose (2003-2007)



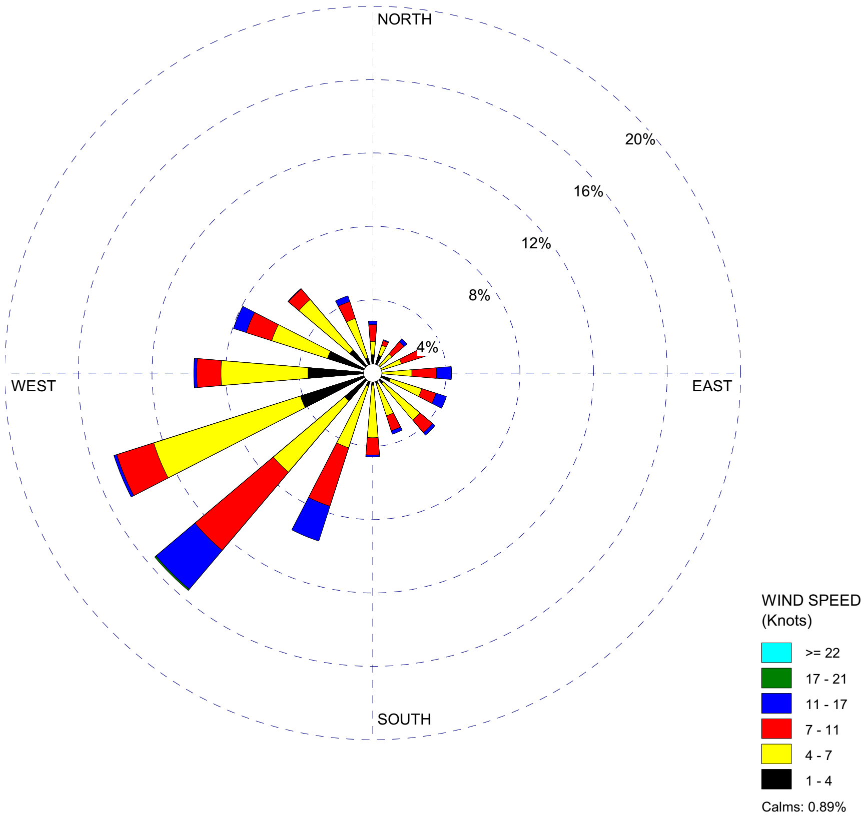
## Figure 2.7-40 Fermi Site 10-Meter October Wind Rose (2003-2007)



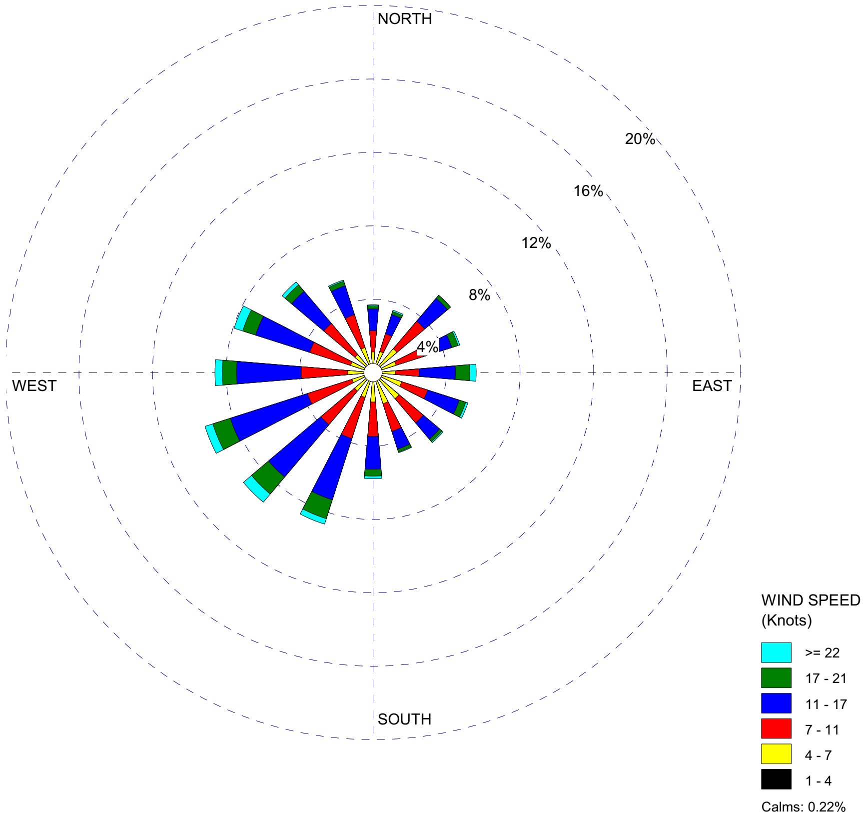
# Figure 2.7-41 Fermi Site 10-Meter November Wind Rose (2003-2007)



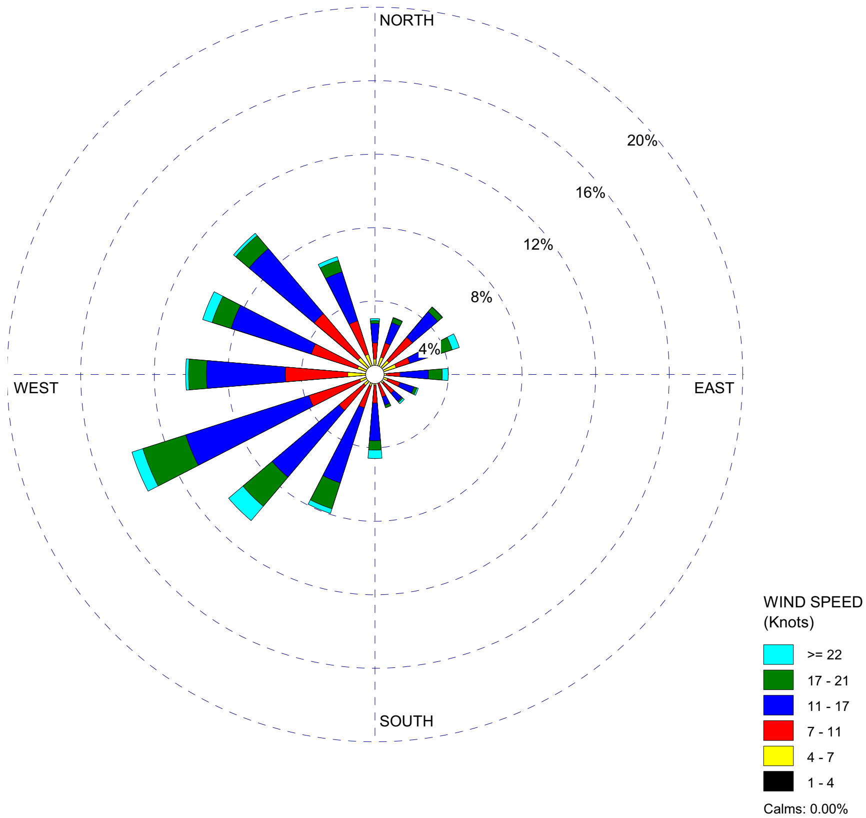
## Figure 2.7-42 Fermi Site 10-Meter December Wind Rose (2003-2007)



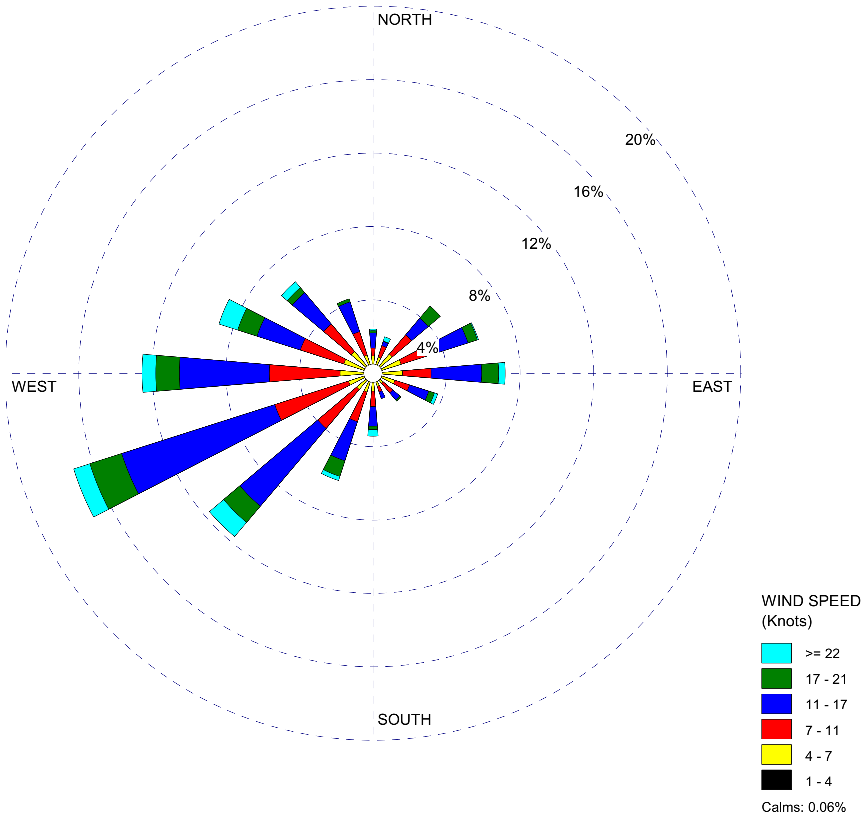
## Figure 2.7-43 Fermi Site 60-Meter Annual Wind Rose (2003-2007)



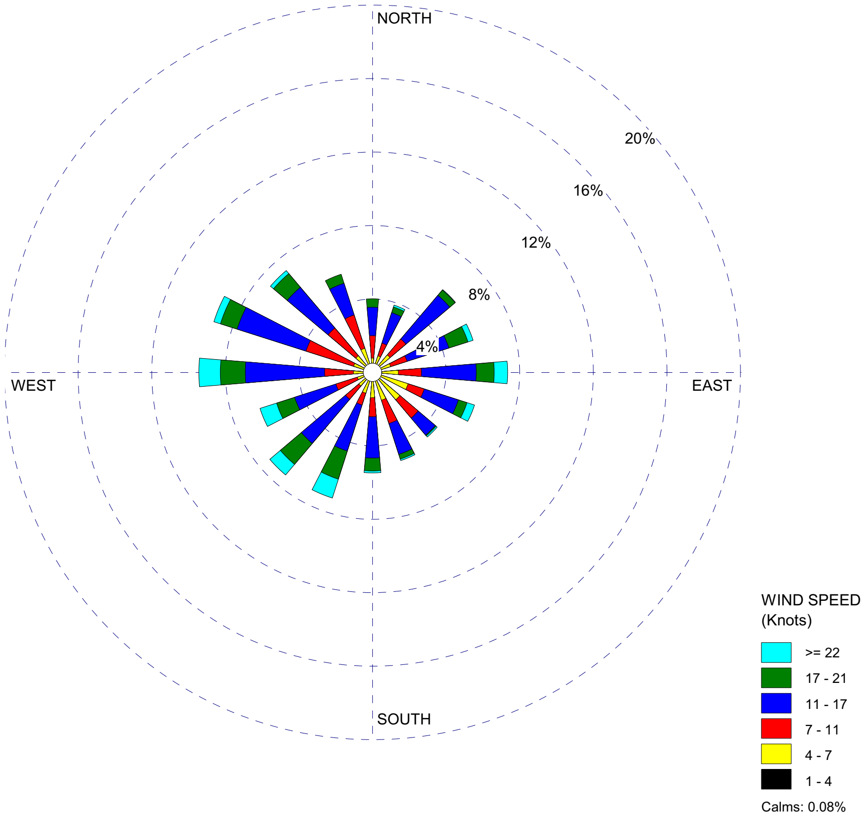
# Figure 2.7-44 Fermi Site 60-Meter January Wind Rose (2003-2007)



## Figure 2.7-45  Fermi Site 60-Meter February Wind Rose (2003-2007)



# Figure 2.7-46  Fermi Site 60-Meter March Wind Rose (2003-2007)



## Figure 2.7-47 Fermi Site 60-Meter April Wind Rose (2003-2007)

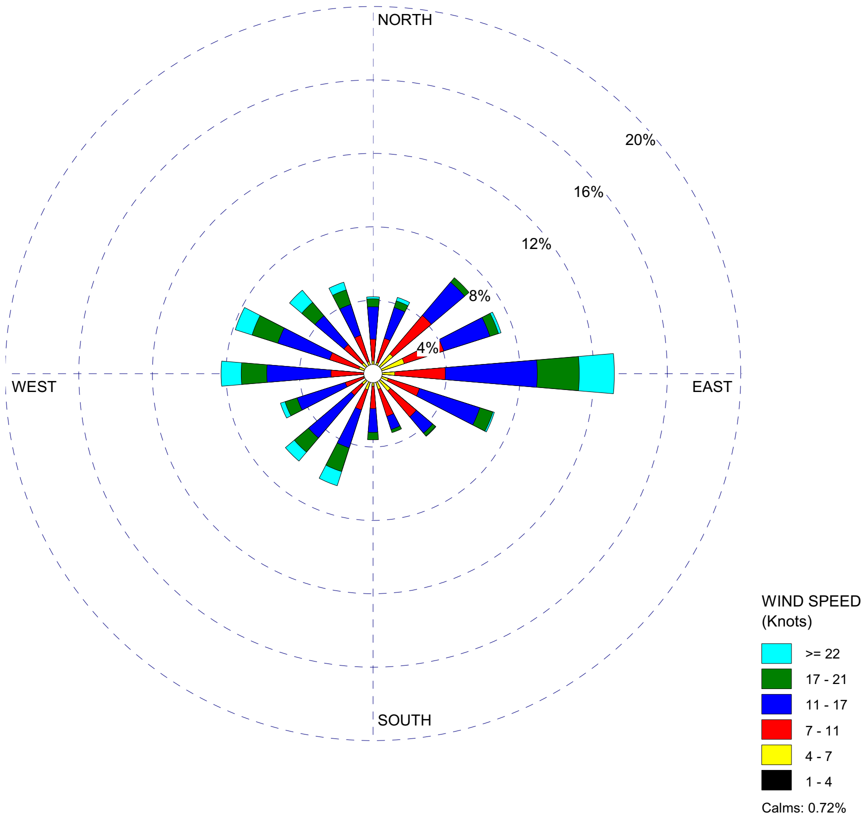
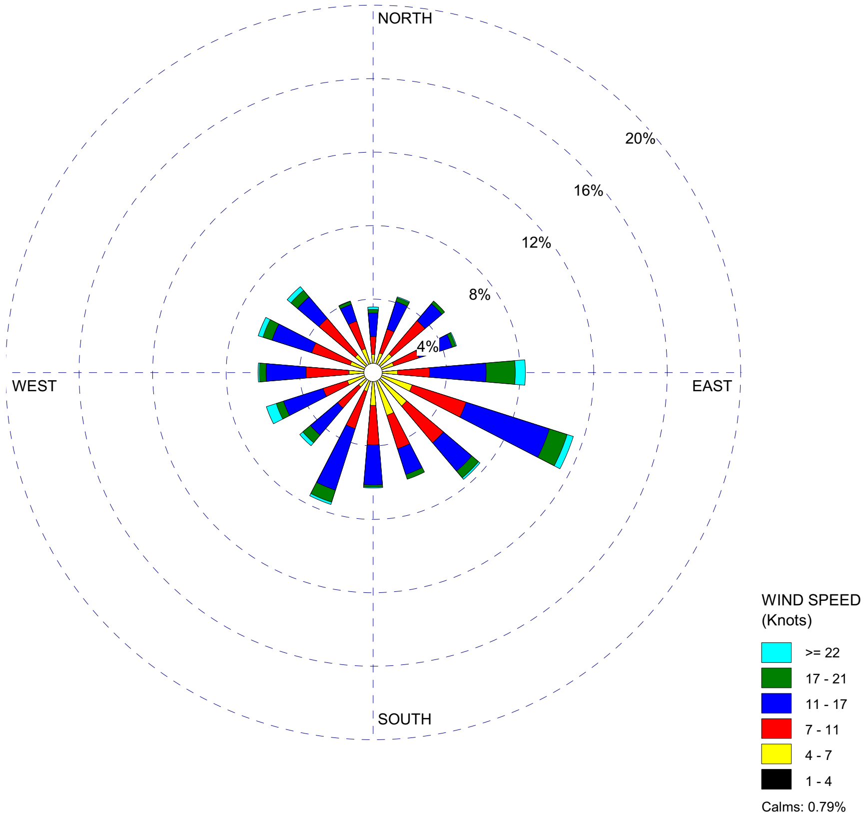
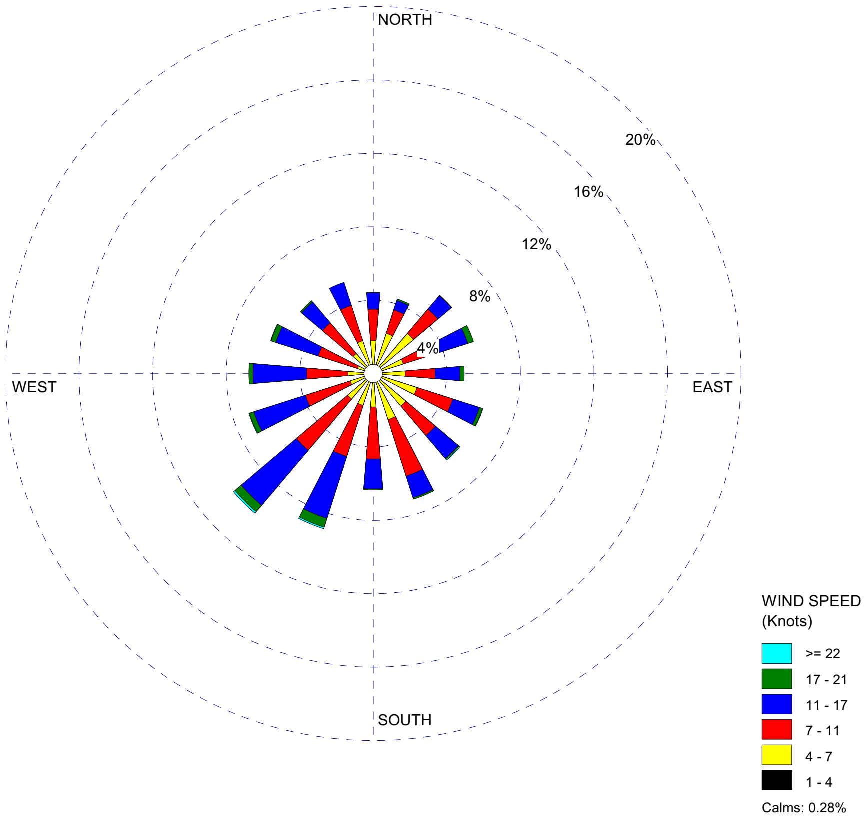


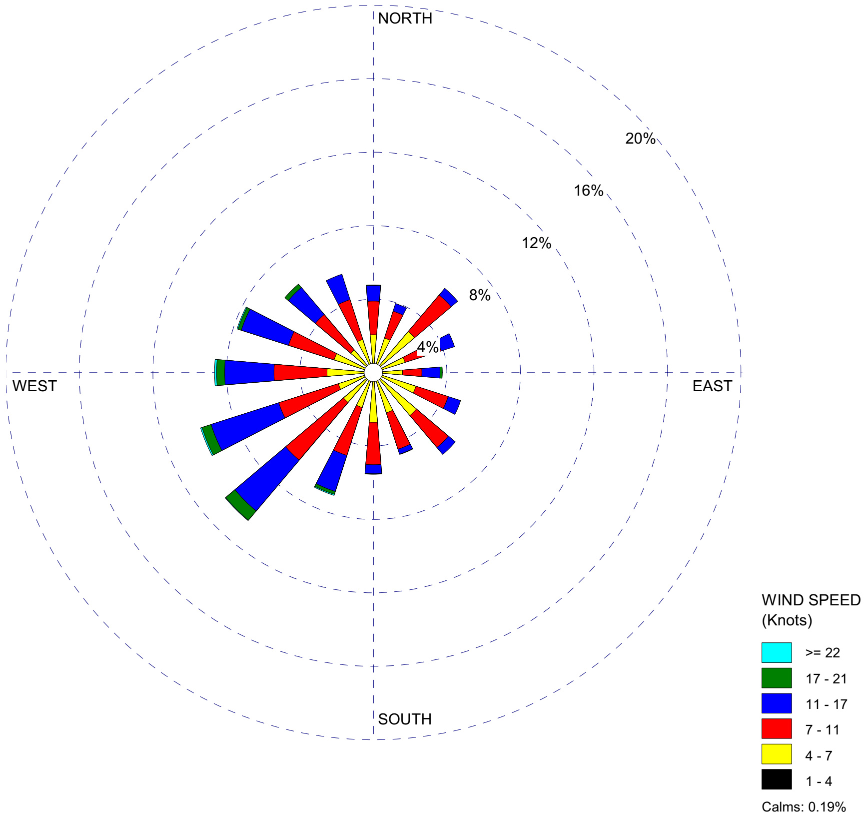
**Figure 2.7-48 Fermi Site 60-Meter May Wind Rose (2003-2007)**



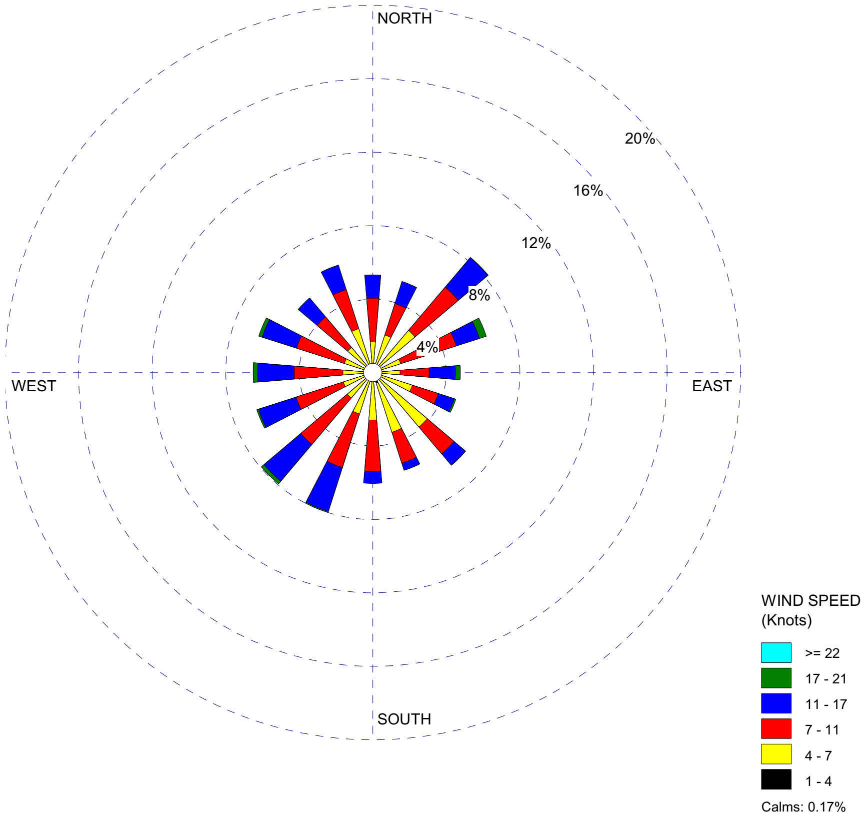
# Figure 2.7-49 Fermi Site 60-Meter June Wind Rose (2003-2007)



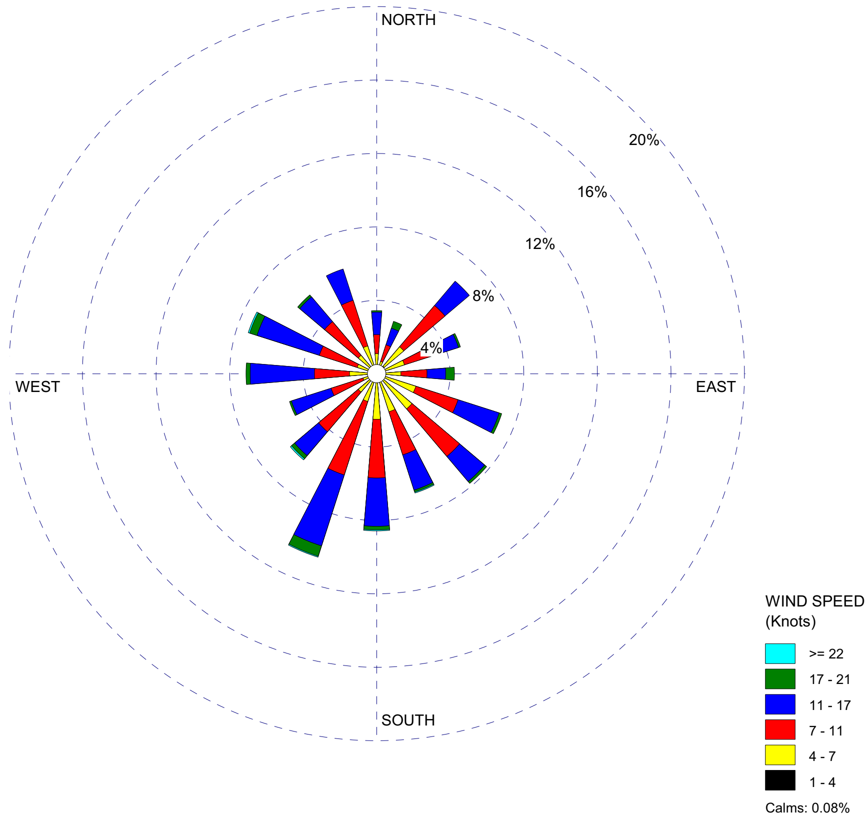
## Figure 2.7-50 Fermi Site 60-Meter July Wind Rose (2003-2007)



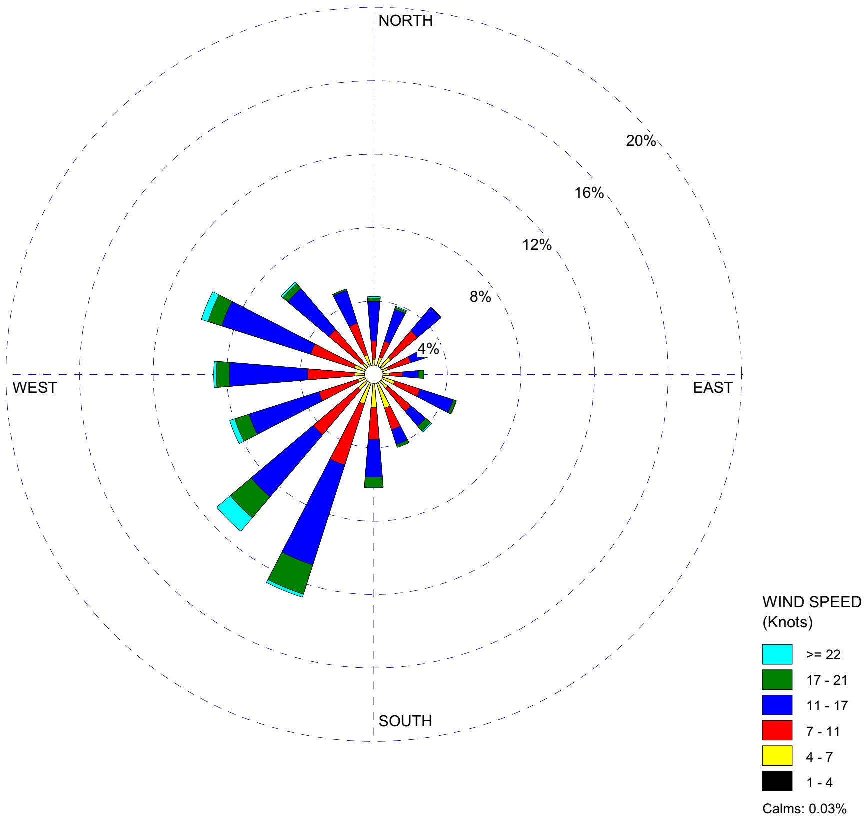
## Figure 2.7-51 Fermi Site 60-Meter August Wind Rose (2003-2007)



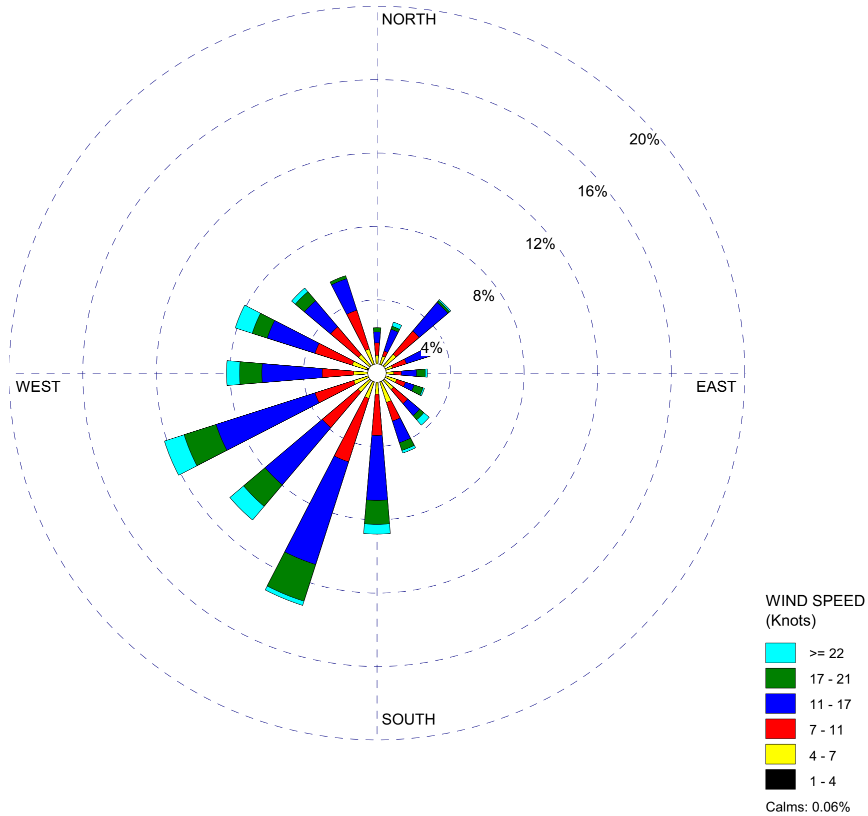
## Figure 2.7-52 Fermi Site 60-Meter September Wind Rose (2003-2007)



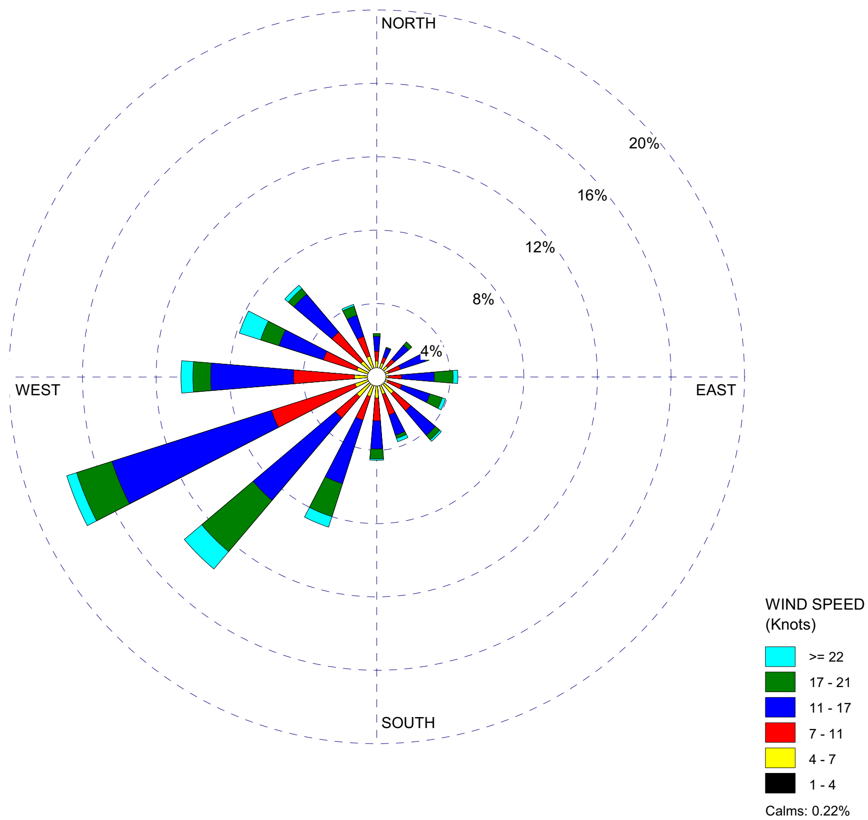
## Figure 2.7-53 Fermi Site 60-Meter October Wind Rose (2003-2007)



# Figure 2.7-54 Fermi Site 60-Meter November Wind Rose (2003-2007)



## Figure 2.7-55 Fermi Site 60-Meter December Wind Rose (2003-2007)



## Figure 2.7-56 Topographic Features Within 5 Miles of the Fermi Site

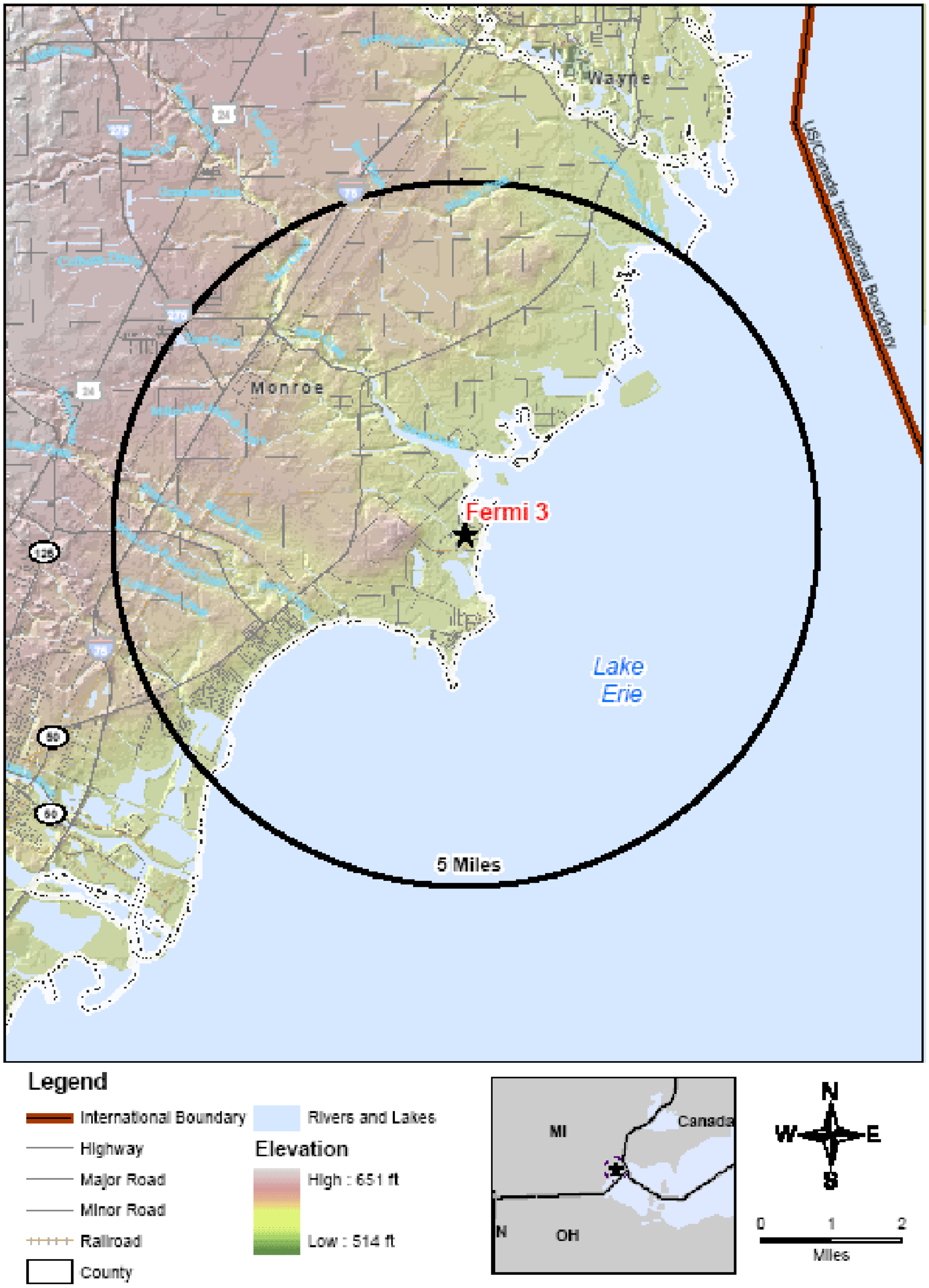
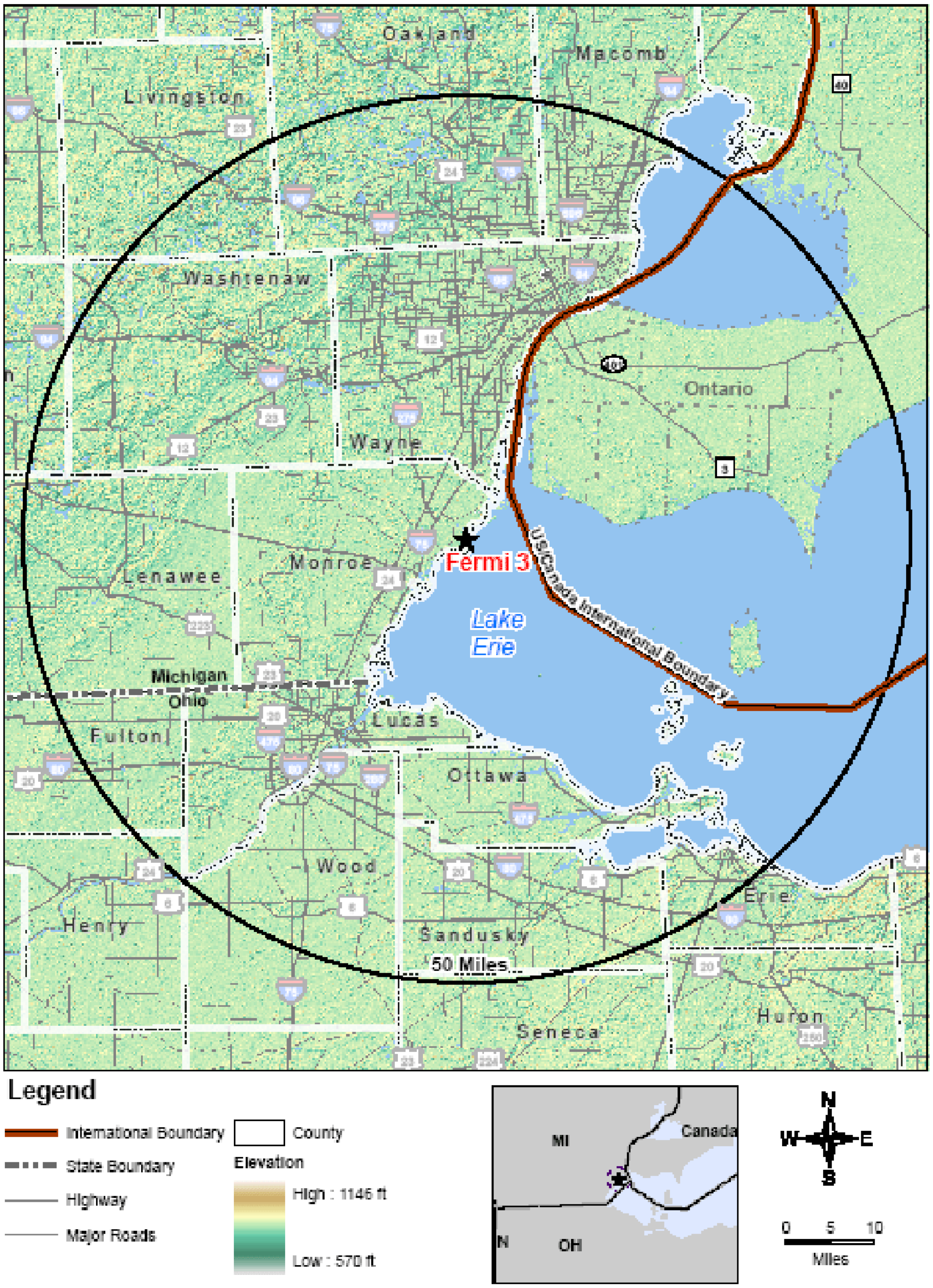
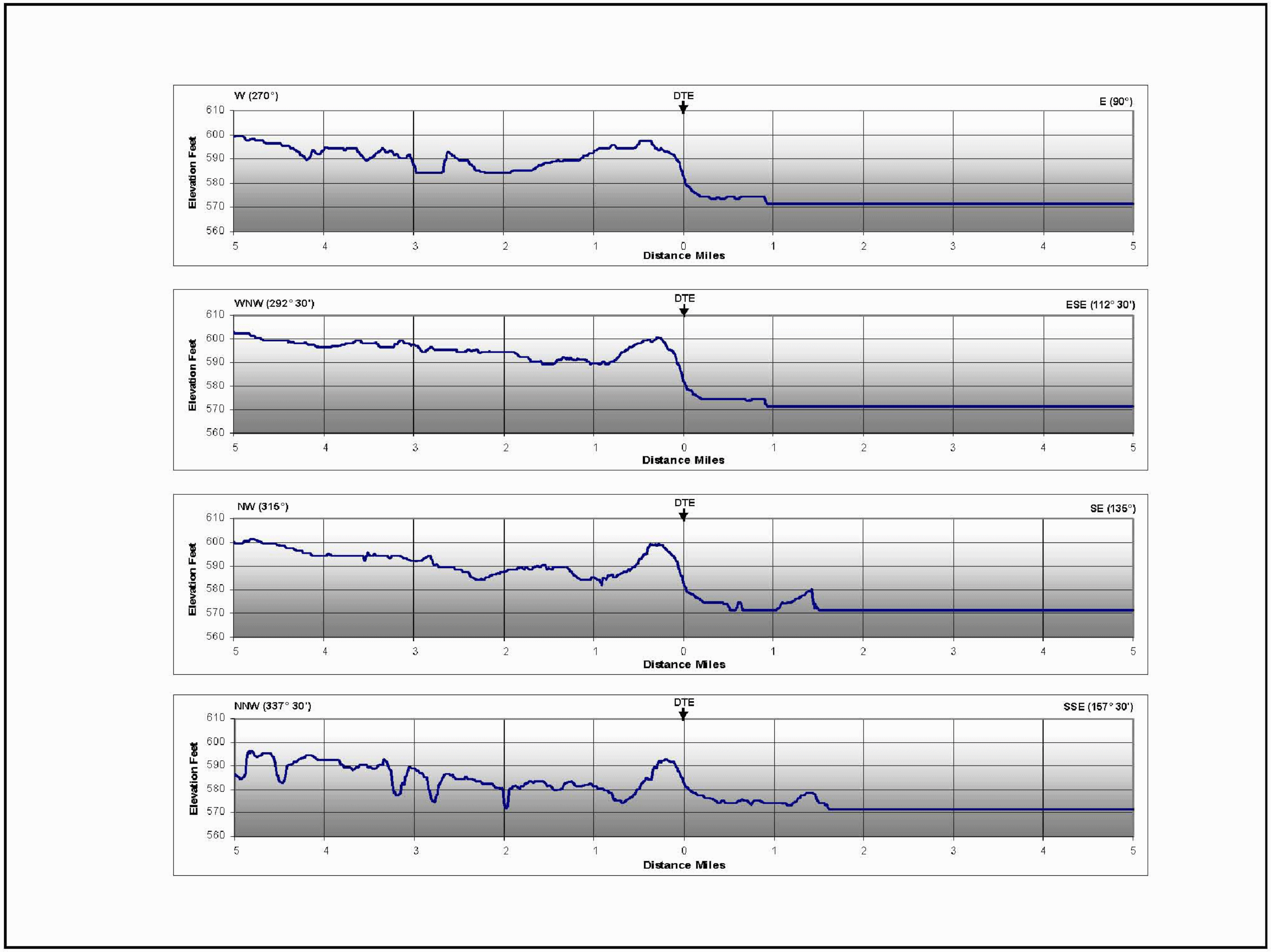


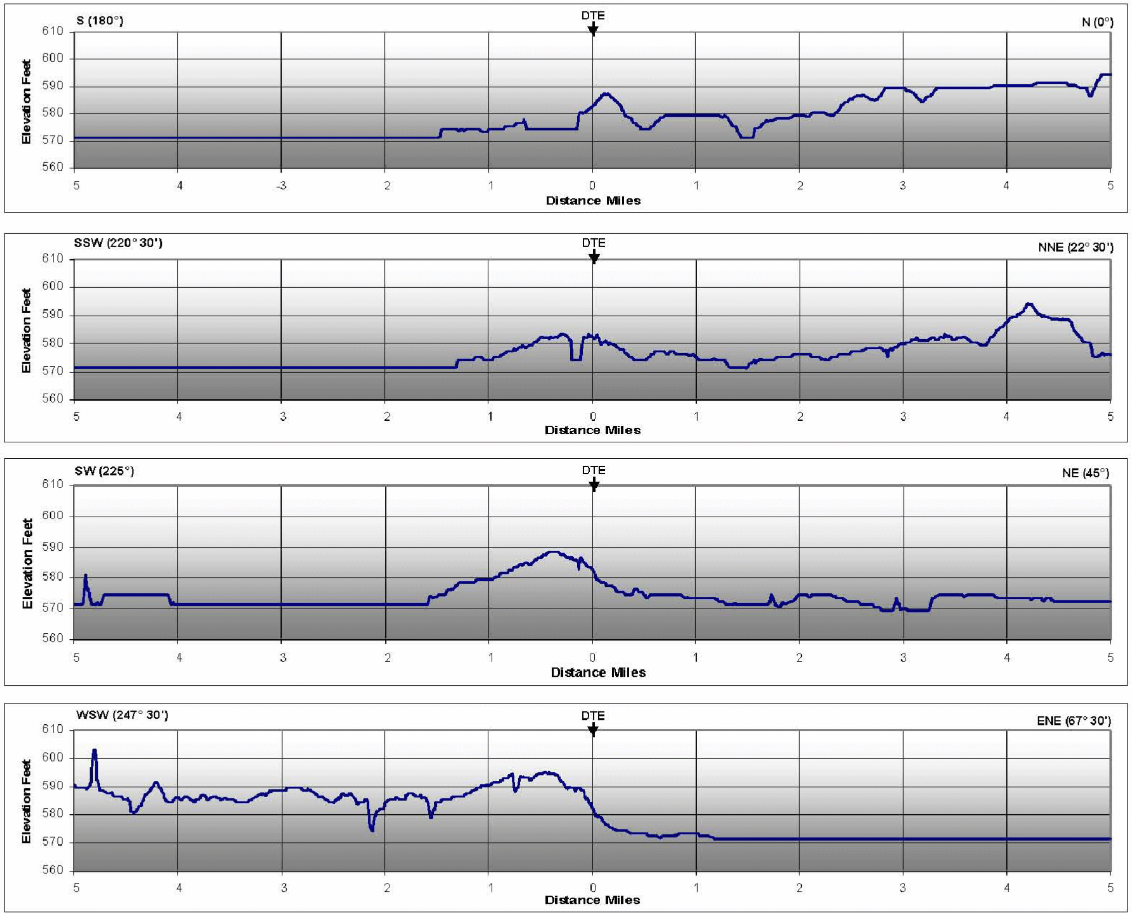
**Figure 2.7-57 Topographic Features Within 50 Miles of the Fermi Site**



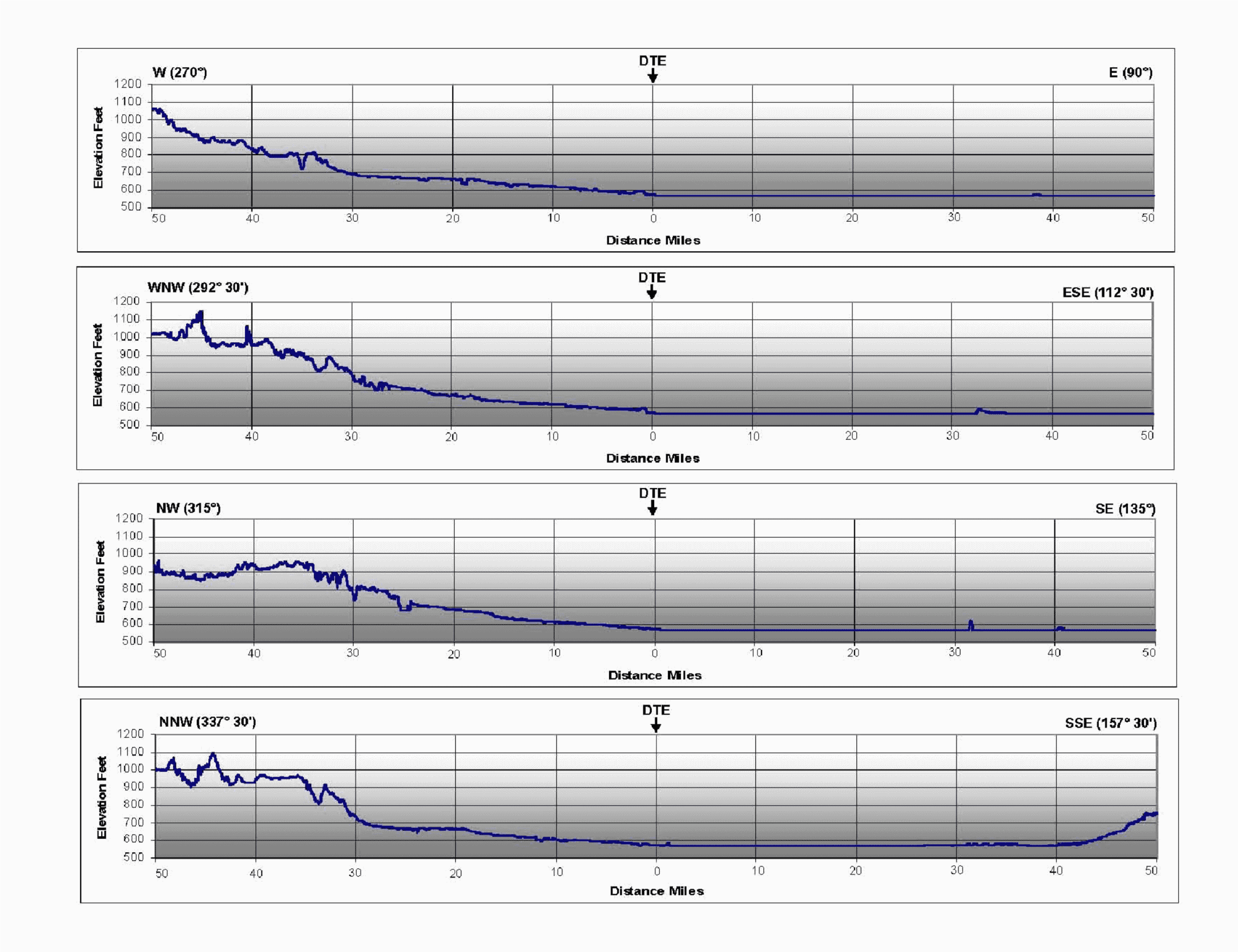
## Figure 2.7-58 Terrain Elevation Profiles Within 5 Miles of the Fermi Site (Sheet 1 of 2)



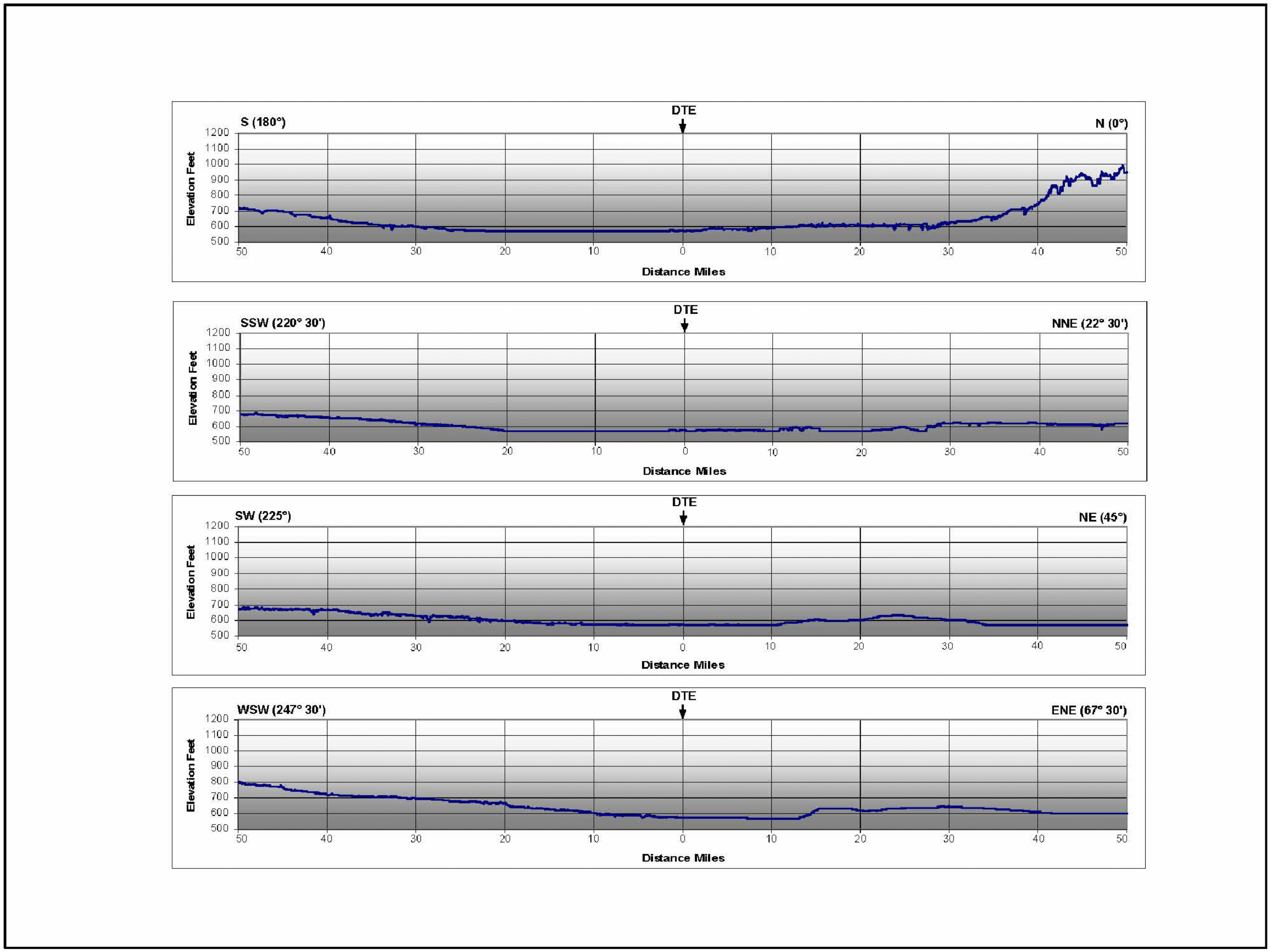
## Figure 2.7-58 Terrain Elevation Profiles Within 5 Miles of the Fermi Site (Sheet 2 of 2)



## Figure 2.7-59 Terrain Elevation Profiles Within 50 Miles of the Fermi Site (Sheet 1 of 2)



## Figure 2.7-59 Terrain Elevation Profiles Within 50 Miles of the Fermi Site (Sheet 2 of 2)



## 2.8 Related Federal Project Activities

The purpose of this section is to identify Federal activities directly related to the proposed project in order to: (1) determine the need for other Federal agencies (i.e., cooperating agencies) to participate in the preparation of the environmental impact statement; and (2) assess the interrelationship and cumulative environmental impacts of the proposed project and related federal activities.

The scope of this review is limited to directly-related Federal project activities that affect land acquisitions or use, transmission line routing, plant siting and water supply, construction or operation of Fermi 3, or the need for power. Actions related to the granting of licenses, permits, or approvals by other Federal agencies are not discussed in this section.

### 2.8.1 Federal Actions Related to Land Acquisitions or Use Affecting Fermi 3 Project

No Federal actions associated with the acquisition and/or use of the proposed site and transmission corridors or any other offsite property needed for the proposed project were identified. Fermi 3 is sited on the existing Enrico Fermi (Fermi) site that is owned by the Applicant. While no Federal actions are associated with the acquisition or use of the land for the construction or operation of Fermi 3, Detroit Edison and the USFWS entered a Cooperative Agreement (Agreement) September 25, 2003 concerning portions of the Fermi site. Under the Agreement, Detroit Edison authorized the USFWS to include certain lands and waters on the Fermi site within the DRIWR. The Agreement allows either party to end the agreement either in whole or in part through mutual agreement, or at the option of either party, upon 90 days written notice to the other. Therefore, lands currently operated as part of the DRIWR, subject to the National Wildlife Refuge System rules, will be removed from the Agreement. However, the Applicant intends to return all available wetlands, that can be returned, to the DRIWR following construction.

The offsite 345 kV transmission system and associated corridors are exclusively owned and operated by ITC*Transmission*. The Applicant has no control over the construction or operation of the offsite transmission system. ITC*Transmission* has identified the need for additional transmission lines and an undeveloped corridor to accommodate Fermi 3. New transmission lines associated with Fermi 3 will largely be placed within existing transmission corridors, and existing infrastructure within the corridors will be used. Activities associated with the transmission system may require the acquisition of new right-of-ways, and will involve the construction of new transmission towers. However, it is not expected that these activities will require any Federal action.

### 2.8.2 Plant Siting and Cooling Water Source and Supply

No directly related Federal activities or relevant cooperating agencies that affect plant siting or water supply were identified. Fermi 3 utilizes a closed-cycle hyperbolic natural draft cooling tower for the Normal Power Heat Sink (NPHS), and mechanical draft cooling towers for the Alternative Heat Sink. Makeup cooling water for the cooling towers is drawn through an intake bay formed by two rock groins extending into Lake Erie.

### 2.8.3 Other Federal Actions Affecting Construction or Operation

A review of Federal agency public records was conducted to identify other planned Federal projects or activities that must be completed as a condition of plant construction or operation. No other Federal activities were identified that would affect the construction or operation of Fermi 3.

### 2.8.4 Federal Agency Plans Influencing Need for Power Justification

A review of the need for power analysis was conducted to identify Federal agency plans or commitments resulting in significant new power purchases within the Applicant's service area that were used to justify a need for power. No Federal projects or activities were identified as generating significant new power purchases within the Applicant's service area, nor have Federal projects or activities been used to justify a need for power.

### 2.8.5 Planned Federal Projects Contingent on Plant Construction or Operation

Based on review of Federal agency public records there are no planned Federal projects or activities that are contingent on plant construction and operation. There are currently no special relationships between the Applicant and Federal agencies dependent upon construction of Fermi 3.

### 2.8.6 References

None.