

Chapter III

**INVENTORY OF AGRICULTURAL,
NATURAL, AND CULTURAL RESOURCES**

INTRODUCTION

The conservation and wise use of agricultural and natural resources and the preservation of cultural resources are fundamental to achieving strong and stable physical and economic development as well as maintaining community identity. The City of Port Washington comprehensive plan recognizes that agricultural, natural, and cultural resources are limited and very difficult or impossible to replace if damaged or destroyed. Information on the characteristics and location of agricultural, natural, and cultural resources in the City is needed to help properly locate future urban and rural land uses to avoid serious environmental problems and to ensure protection of natural resources.

This chapter provides inventory information on existing agricultural, natural, and cultural resources in the Ozaukee County planning area and the City of Port Washington.¹ Information regarding soil types, agricultural productivity, topography and geology, water resources, forest resources, natural areas and critical species habitats, environmental corridors, park and open space sites, historical resources, archeological resources, and non-metallic mining resources is included in this chapter. The planning recommendations set forth in the Agricultural, Natural, and Cultural Resources Element chapter of this report are directly related to the inventory of the resources listed above.

The base years for inventory data presented in this chapter range from 1994 to 2007. Much of the inventory data has been collected through regional land use and natural area planning activities conducted by SEWRPC. Additional inventory data has been collected from the County, local units of government, and State and Federal agencies including the Wisconsin Department of Natural Resources; Wisconsin Department of Agriculture, Trade, and Consumer Protection; State Historical Society of Wisconsin; U.S. Census Bureau; and U.S. Department of Agriculture.

SOILS

The U.S. Department of Agricultural Soil Conservation Service, now the Natural Resources Conservation Service (NRCS), issued a soil survey for Ozaukee County in 1970. The information can be applied in managing farms and woodlands; in selecting sites for roads, buildings, and other structures; identifying mineral resources; and judging the suitability of land for agricultural, industrial, or recreational uses. The soil survey plays an important role in land use decisions. It is possible to determine which areas of the County and the City of Port Washington are suitable for agricultural use, areas vulnerable to erosion, and areas where marketable nonmetallic mineral deposits may be present, as documented later in this chapter through a variety of soil analysis methods.

¹*Agricultural resource inventory data has been collected for the County as a whole, the City of Mequon, and each town in the County. Natural and cultural resource inventory data has been collected for the County as a whole and each city, village, and town participating in the multi-jurisdictional comprehensive planning process.*

The survey identifies and maps each of the various soil types found in the County.² Soils have been mapped and are organized by soil association, soil series, and soil type. Soil associations are general areas with broad patterns of soils. Soil associations in the Ozaukee County planning area are shown on Map III-1. There are five soil associations in Ozaukee County: the Keweenaw-Manawa association, Ozaukee-Mequon association, Hochheim-Sisson-Casco association, Houghton-Adrian association, and the Casco-Fabius association.

Ozaukee County Soil Associations

The Keweenaw-Manawa association contains well-drained to somewhat poorly drained soils that have a subsoil of clay to silty clay loam formed in thin loess and silty clay loam glacial till on uplands. Most of this association is cultivated. Erosion control and tile drainage are the main concerns in managing these soils.

The Ozaukee-Mequon association contains well-drained to somewhat poorly drained soils that have a subsoil of silty clay loam and silty clay formed in thin loess and silty clay loam glacial till on uplands. Most of this association is cultivated with erosion control and drainage of low wet areas being the chief management concerns.

The Hochheim-Sisson-Casco association contains well-drained soils that have a subsoil of loam to clay loam underlain mainly by loamy till, outwash, and lake-laid deposits on uplands, terraces, and in lakebeds. Most areas suitable for cultivation have been cleared and are cultivated. This association also contains more woodlands than other associations found in the County.

The Houghton-Adrian association contains very poorly drained organic soils in basins and depressions. Most areas of this association are wooded and provide habitat for wildlife. Crops grow well on areas that are adequately drained and are protected from soil blowing. Throughout most of the year the water table is high and the soils are highly compressible under heavy loads. Use of the soils for residential and industrial development and for highways is severely limited.

The Casco-Fabius association contains well drained and somewhat poorly drained soils that have a subsoil of clay loam and sandy clay loam; shallow over gravel and sand and on stream terraces. Most of the soils in this association are cultivated. The soils are easy to cultivate and erosion is generally not a serious hazard. These soils are a good source of sand and gravel.

The Keweenaw-Manawa association and the Houghton-Adrian association are the two types of soils that are found in the City of Port Washington.

Saturated Soils

Soils that are saturated with water or that have a water table at or near the surface, also known as hydric soils, pose significant limitations for most types of development. High water tables often cause wet basements and poorly-functioning septic tank absorption fields. The excess wetness may also restrict the growth of landscaping plants and trees. Wet soils also restrict or prevent the use of land for crops, unless the land is artificially drained. Map III-2 depicts hydric soils in the City of Port Washington planning area, as identified by the NRCS and the County Planning, Resources, and Land Management Department. Approximately 25.8 percent of the City of Port Washington planning area is covered by hydric soils (about 2,531 acres), generally associated with stream beds and wetland areas. Although such areas are generally unsuitable for development, they may serve as important locations for restoration of wetlands, as wildlife habitat, and for stormwater detention.

AGRICULTURAL RESOURCES

² *The Ozaukee County Soil Survey does not include that portion of the County planning area located in Washington County. A Washington County soil survey was issued by the NRCS in June 1971.*

Soil Suitability for Agricultural Production

The NRCS has classified the agricultural capability of soils based on their general suitability for most kinds of farming. These groupings are based on the limitations of the soils, the risk of damage when used, and the way in which the soils respond to treatment. Class I soils have few limitations, the widest range of use, and the least risk of damage when used. Class II soils have some limitations that reduce the choice of plants that can be grown, or require moderate conservation practices to reduce the risk of damage when used. The soils in the other classes have progressively greater natural limitations. Class VIII soils are so rough, shallow, or otherwise limited that they do not produce economically worthwhile yields of crops, forage, or wood products. Generally, lands with Class I and II soils are considered “National Prime Farmlands” and lands with Class III soils are considered “Farmlands of Statewide Significance.”

Following preparation of the County farmland preservation plan, the NRCS developed an alternative method for identifying areas to be preserved as farmland. This method is known as the Land Evaluation and Site Assessment (LESA) system. LESA is a numeric system for rating potential farmland preservation areas by evaluating soil quality (LE or land evaluation) and geographic variables (SA or site assessment). The LESA system was used to identify the farmland preservation areas recommended by this plan.

The land evaluation component of the LESA rating system is based on the NRCS Soil Survey Geographic Database (SSURGO), which includes the County soil surveys and the attributes of each soil type. The NRCS rated each soil type in Ozaukee and Washington Counties and placed the soil ratings into groups ranging from the best to the worst suited for cropland. The best group is assigned a value of 100 and all other groups are assigned lower values. In addition to soil type, the land evaluation component considers slope, the agricultural capability class, and soil productivity. Map III-3 depicts the land evaluation ratings for agricultural soils in the City of Port Washington planning area, grouped by various ranges. Table III-1 shows the land evaluation ratings for agricultural soils in the Ozaukee County planning area.

The site assessment component of the LESA rating system is based on geographic variables which have been determined specifically for the Ozaukee County planning area and each town participating in the multi-jurisdictional planning process. The site assessment component of the LESA rating system is documented in Chapter VII of this report, which also presents recommended farmland preservation areas that should be taken into consideration as the City of Port Washington expands in the future.

NATURAL RESOURCES

Topography and Geology

The landforms and physical features of the City of Port Washington and the Ozaukee County planning area, such as the topography and geology, are important determinants of regional growth and development. The physical geography of an area must be considered in land use, transportation, and utility and community facility planning and development, and for its contribution to the natural beauty and overall quality of life in an area. The City is located in the Ozaukee County planning area, which lies on the western shore of Lake Michigan and directly east of a major subcontinental divide between the Mississippi River and the Great Lakes – St. Lawrence River drainage basins.

Topographic Features

Glaciation has largely determined the topography and soils of the Ozaukee County planning area. Generalized areas of physiographic features and generalized topographic characteristics in 100 foot interval contours are shown on Map III-4. Surface elevations in the County planning area range from a low of 580 feet above sea level

in the Town of Belgium along Lake Michigan to a high of 988 feet above sea level in the southwestern portion of the Town of Cedarburg. In general, the topography of the County planning area is relatively level to gently rolling in some areas, with low lying areas associated with streams and wetlands. The nature of the Lake Michigan shoreline in the County is generally characterized by areas of steep slopes, including bluffs and several ravines.

There is evidence of four major stages of glaciation in the Ozaukee County planning area. The last and most influential in terms of present topography was the Wisconsin stage, which ended in the State about 11,000 years ago. Except for a few isolated spots where dolomite bedrock is exposed at the surface, the entire planning area is covered with glacial deposits ranging from large boulders to fine grain clays such as silty clay loam till, loam to clay loam, and organic mucky peat. Glacial deposits may be economically significant because some are prime sources of limestone, which has historically been quarried in the Ozaukee County planning area.

Geology

Knowledge of bedrock and the surface deposits overlaying the bedrock is important to land use, transportation, and other utility and community facility planning. Bedrock conditions and the overlaying surface deposits directly affect the construction costs of urban development such as streets, highways, and utilities, particularly those that involve extensive trenching or tunneling, and also affect the location of onsite waste treatment systems. The bedrock formations underlying the planning area consist of the Milwaukee Formation and Niagara Dolomite. The Milwaukee Formation includes shale and shale limestone and dolomite in the bottom third. It is approximately 130 feet thick and is found in a 23,276 acre area, or about 36 square miles, in the eastern portion of the Ozaukee County planning area along Lake Michigan. The Milwaukee Formation underlies the City of Port Washington. Niagara Dolomite is approximately 100 feet thick and is found in a 135,520 acre area, or almost 212 square miles in the central and western portions of the County planning area. Map III-5 depicts the depth to bedrock found in the Ozaukee County planning area.

A total of 16 sites of geological importance, including one glacial feature and 15 bedrock geology sites, were identified in the County in 1994 as part of the regional natural areas study. The geological sites included in the inventory were selected on the basis of scientific importance, significance in industrial history, natural aesthetics, ecological qualities, educational value, and public access potential. The 16 sites selected in Ozaukee County include five sites of statewide significance (GA-1), six sites of countywide or regional significance (GA-2), and five sites of local significance (GA-3). Together, these sites encompass about 274 acres in Ozaukee County. There are no sites located in the Washington County portion of the planning area. Map III-6 shows the locations of the sites of geological importance. Table III-2 sets forth a description of each site. There are no sites of geological importance located in the City of Port Washington planning area.

Lake Michigan Bluff and Ravine Areas

Shoreline erosion and bluff stability conditions are important considerations in planning for the protection and sound development and redevelopment of lands located along Lake Michigan. These conditions can change over time because they are related to changes in climate, water level, the geometry of the near shore areas, the extent and condition of shore protection measures, the type and extent of vegetation, and the type of land uses in shoreland areas. In 1995 SEWRPC completed a study of shoreline erosion and bluff stability conditions along Lake Michigan for its entire length in the Southeastern Wisconsin Region. The findings for the City of Port Washington planning area are summarized in Table III-3 and depicted on Map III-7. The findings shown in Table III-3 are from multiple research points along several shoreline "reaches" which begin in the Town of Grafton and progress northward along the shoreline to the Town of Port Washington-Town of Belgium border. The linear expanse of each reach was determined by the presence of similar shoreline characteristics.

Information summarized in Table III-3 includes bluff height, bluff stability, shoreline recession data, and beach width. The same information is documented in greater detail in the 1995 SEWRPC Lake Michigan shoreline recession and bluff stability report. Bluff stability field research was conducted at 192 sites, including 62 sites in

Ozaukee County. A safety factor score was calculated for potential failure surfaces within the bluffs using shear strengths and stresses. The score is defined as the ratio of the forces resisting shear, such as soil cohesion and friction, to the forces promoting shear, such as soil mass, along a failure surface. A score of less than 1.0 is considered unstable, a score of 1.0 to 1.1 is considered marginally stable, and a score of greater than 1.1 is considered stable.

There are 4.8 miles of linear Lake Michigan shoreline in the City of Port Washington planning area. The City of Port Washington planning area shoreline contains areas of substantial bluffs with heights of up to 130 feet, ravines, areas of gently rolling beaches with widths of up to 100 feet, and areas of low sand dune ridges and swales. Bluff stability safety factors ranged greatly in the planning area from 0.59 to 1.81. Shoreline recession rates also ranged greatly from an average of 0 feet per year between 1963 and 1995 to an average of 1.9 feet per year between 1963 and 1995. Estimated beach width ranged between 0 feet and 100 feet at selected sites along the shoreline.

Nonmetallic Mineral Resources

Nonmetallic minerals include, but are not limited to, sand, gravel, crushed stone, building or dimension stone, peat, and clay. Nonmetallic mines (quarries and pits) in Southeastern Wisconsin provide sand, gravel, and crushed limestone or dolomite for structural concrete and road building; peat for gardening and horticulture; and dimension stone for use in buildings, landscaping, and monuments. Nonmetallic mineral resources are important economic resources that should be taken into careful consideration whenever land is being considered for development. Mineral resources, like other natural resources, occur where nature put them, which is not always convenient or desirable. Wise management of nonmetallic mineral resources is important to ensure an adequate supply of aggregate at a reasonable cost for new construction and for maintenance of existing infrastructure in the future.

According to the U.S. Geological Survey, each person in the United States uses an average of 9.5 tons of construction aggregate per year (construction aggregate includes sand, gravel, crushed stone, and recycled crushed concrete). Construction of one lane-mile of Interstate Highway uses 20,000 tons of aggregate. Aggregate is heavy and bulky, and is therefore expensive to transport. Having sources of aggregate relatively close (within 25 miles) of a construction project lessens the overall cost of construction. The cost of a ton of aggregate can more than double when it has to be hauled 25 miles or more.

Potential Sources of Sand, Gravel, Clay, and Peat

Map III-8 shows the location of areas that have the potential for commercially workable sources of sand, gravel, clay, and peat in the Ozaukee County planning area. The information was developed by the Wisconsin Geological and Natural History Survey (WGNHS) in 2006 using a variety of sources, including geologic studies,³ data from Road Material Survey records collected by WGNHS for the Wisconsin Department of Transportation, information on existing quarries, and information on closed quarries that were recently active. The sand and gravel potential is shown as high, medium, or low based on the glacial geology (Mickelson and Syverson, 1997). Map III-8 shows the areas in the Ozaukee County planning area identified as having the highest potential for significant deposits of gravel and coarse to moderate sand (“outwash deposits” on Map III-8), and those areas with medium to low potential for sand and gravel (“glacial till” on Map III-8). In the City of Port Washington planning area 742 acres, or 7.6 percent of the planning area, have been identified as areas with high potential for significant deposits of sand and gravel.

Potential Sources of Crushed and Building Stone

³ *Bedrock geology from Preliminary Bedrock Maps of Ozaukee County (WOFR 2004-16) by T. Evans, K. Massie-Ferch, and R. Peters, WGNHS.*

Map III-9 shows the location of potential commercially workable sources of stone suitable for crushed or building stone in the Ozaukee County planning area. The information was developed by the WGNHS based on areas underlain by Silurian dolomite within 50 feet of the land surface. Areas in Ozaukee County with bedrock near enough to the surface to economically quarry stone are limited to only about 17,863 acres, or about 11 percent of the County. Areas with bedrock near the surface are a northeasterly extension of the ridge of shallow bedrock that is an important stone-producing area around Sussex and Lannon in Waukesha County.

Existing Nonmetallic Mining Sites and Registered Sites

There are 21 nonmetallic mining operations encompassing about 479 acres in the Ozaukee County planning area, which are listed in Table III-4 and shown on Map III-10. Each mining operation may include a combination of active mining sites, future mining sites, proposed mining sites, reclaimed mining sites, and unreclaimed mining sites. Active mining sites encompass about 216 acres. Future mining sites that are not currently in operation and have not yet completed the approval process encompass 17 acres. Proposed mining sites that are not currently in operation and have completed the approval process encompass 39 acres. Reclaimed mining sites that are out of operation and have an approved reclamation plan encompass about 94 acres. Unreclaimed mining sites that are out of operation and do not have an approved reclamation plan encompass about 113 acres. Section 295.16 (4) of the *Wisconsin Statutes* establishes which activities are exempt from nonmetallic mining reclamation requirements. As of 2005, there were no active nonmetallic mining operations located in the City of Port Washington planning area.

NR 135 subchapter VI defines a marketable mineral deposit as one which can be or is reasonably anticipated to be commercially feasible to mine and which has significant economic or strategic value. Only the owner of the land (as opposed to the owner of the mineral rights or other partial rights) can register a marketable nonmetallic mineral deposit. The registration must include a legal description of the land and certification and delineation by a registered professional geologist or a registered professional engineer. In making this certification, the geologist or engineer must describe the type and quality of the nonmetallic mineral deposit, the areal extent and depth of the deposit, how the deposit's quality, extent, location, and accessibility contribute to its marketability, and the quality of the deposit in relation to current and anticipated standards and specifications for the type of material concerned. There are no registered mining sites in Ozaukee County.

A person wishing to register land pursuant to NR 135 subchapter VI must provide evidence that nonmetallic mining is a permitted or conditional use of the land under zoning in effect on the day notice is provided by the owner to government authorities. A copy of the proposed registration and supporting information must be provided to each applicable zoning authority (city, village, or town), the County, and the Department of Natural Resources (DNR) at least 120 days prior to filing the registration. The registration must include a certification by the landowner, which is binding on the landowner and his or her successors in interest, that the landowner will not undertake any action that would permanently interfere with present or future extraction of nonmetallic materials for the duration of the registration. Registration of nonmetallic resources by a landowner is optional and is relatively expensive due to the information that must be submitted. The expense may be one reason this option has not been widely used.

Section 66.1001(4) of the *Wisconsin Statutes* requires any unit of government that prepares and adopts a comprehensive plan to prepare and adopt written procedures to foster public participation. These written procedures must describe the methods the local government will use to distribute proposed elements of a comprehensive plan to owners, or to persons who have a leasehold interest in property pursuant to which the persons may extract nonmetallic mineral resources in or on property, in which the allowable use or intensity of use of the property is proposed to be changed by the comprehensive plan. All registered owners and leaseholders in the Ozaukee County planning area were provided with copies of the proposed Agricultural, Natural, and Cultural Resources and Land Use elements of the County comprehensive plan and offered an opportunity to submit comments.

Water Resources

Water resources such as lakes, streams and their associated floodplains, and groundwater form an important element of the natural resource base of the Ozaukee County and City of Port Washington planning areas. The contribution of these resources is immeasurable to economic development, recreational activity, and aesthetic quality of the planning area.

Major Watershed, Subwatersheds, and Subbasins

Map III-11 identifies major watersheds within the Ozaukee County planning area, which include five major watersheds and an area that drains directly into Lake Michigan. All of the major watersheds are part of the Great Lakes-St. Lawrence River drainage system. The major watersheds include the Milwaukee River watershed, Sauk Creek watershed, Menominee River watershed, Sheboygan River watershed, and Sucker Creek watershed. The majority of Ozaukee County is located in the Milwaukee River watershed which covers 164 square miles, or 66 percent of the planning area. For stormwater management planning purposes, all of the watersheds are further subdivided into subwatersheds and subbasins. Subwatersheds and subbasins are also shown on Map III-11. The City of Port Washington planning area lies primarily within the Sauk Creek watershed, but a small western part and a small southern part of the planning area lie within the Milwaukee River watershed.

A subcontinental divide that separates the Mississippi River and the Great Lakes – St. Lawrence River drainage basins crosses Washington County to the west of the Ozaukee County planning area, as shown on Map III-12. The Ozaukee County planning area is located entirely east of the subcontinental divide. The local governments within the County planning area, including the City of Port Washington, are therefore not subject to limitations on the use of Lake Michigan water that affect areas west of the divide.

Map III-12 also shows the location of precipitation stations and surface water monitoring points in the Southeastern Wisconsin Region, which monitor the atmospheric and surface phases of the hydrologic cycle. Through these stations the amount of precipitation is monitored and stream discharges, lake levels, and water quality of streams and lakes are monitored. In addition, Map III-12 also shows active and discontinued observation wells in the Southeastern Wisconsin Region. There are no active observation wells in the County planning area; however, there are a number of surface water monitoring points in the County.

Surface Water Resources

Surface water resources consist of streams, rivers, lakes, and associated floodplains and shorelands. Lakes, rivers, and streams constitute a focal point for water-related recreational activities and greatly enhance the aesthetic quality of the environment. However, lakes, rivers, and streams are readily susceptible to degradation through improper land development and management throughout their drainage areas. Water quality can be degraded by excessive pollutant loads, including nutrient loads, from manufacturing and improperly located onsite waste treatment systems; sanitary sewer overflows; urban runoff, including runoff from construction sites; and careless agricultural practices. The water quality of surface waters may also be adversely affected by the excessive development of riparian areas and inappropriate filling of peripheral wetlands. This adds new sources of undesirable nutrients and sediment, while removing needed areas for trapping nutrients and sediments. Surface waters, shown on Map III-13, cover an area of 78 acres, or less than one percent, of the City of Port Washington planning area.

Dams

There are approximately 3,800 dams in the State of Wisconsin. Since the late 1800's, more than 700 dams have been washed out or removed. Since 1967 about 100 dams have been removed. About 60 percent of dams in the State are privately owned, 17 are owned by a municipality or county, 9 percent are owned by the State, and 17 percent are under other types of ownership. In the Ozaukee County planning area, 11 dams, or about 61 percent, are privately owned, 5 dams, or about 28 percent, are owned by a municipality, one dam is owned by the County, and one dam is owned by the State.

Dams with a structural height of six feet or greater and impounding 50 acre-feet or more, and dams within a height of 25 feet or more and impounding 15 acre-feet or more, are classified as large dams. Eight dams, or 44 percent of dams in the Ozaukee County planning area, are classified as large dams. The Federal government regulates over 200 large dams that produce hydroelectricity, which represents about 5 percent of the dams in the State. The DNR regulates the rest of the dams. All dams located in the Ozaukee County planning area are regulated by the DNR. The location of dams and abandoned dams in the Ozaukee County planning area is shown on Map III-14. The ownership and size characteristics of these dams are set forth in Table III-5. There are no dams located within the City of Port Washington planning area.

Lakes

Lakes have been classified by the Regional Planning Commission as being either major or minor. Major lakes have 50 acres or more of surface water area, and minor lakes have less than 50 acres of surface water area. There are three major inland lakes located entirely or partially within the Ozaukee County planning area. There are no major lakes located within the City of Port Washington planning area. In addition to major lakes there are 546 minor lakes located within the Ozaukee County planning area. The total surface area of major and minor lakes in the Ozaukee County planning area is 986 acres and 25 acres in the City planning area. The entire eastern side of the Ozaukee County planning area, including the eastern side of the City of Port Washington planning area, is bounded by Lake Michigan with approximately 25 miles of shoreline.

Streams

Rivers and streams are classified as either perennial or intermittent. Perennial streams are defined as watercourses that maintain a continuous flow throughout the year. Intermittent streams are defined as watercourses that do not maintain a continuous flow throughout the year. There are approximately 100 miles of perennial streams in the planning area, including approximately 94 miles Ozaukee County and 6 miles in Washington County. Major streams in the Menomonee River watershed, which generally includes the area in the southwestern corner of the planning area, include the Little Menomonee Creek and Little Menomonee River. Major streams in the Milwaukee River watershed, which generally includes the area in the western half of the planning area, include the Milwaukee River and Cedar Creek. Sauk Creek is the major stream in the Sauk Creek watershed, which generally includes the area in the north central portion of the planning area. The major stream in the Ozaukee County portion of the Sheboygan River watershed is Belgium Creek, which is a tributary to the Onion River in Sheboygan County. Belgium Creek is identified as an intermittent stream. Sucker Creek is the major stream in the Sucker Creek watershed. Sauk Creek is the major stream located within the City of Port Washington planning area.

Public Access to Rivers, Streams, and Lakes

Lakes, rivers, and streams provide important recreational opportunities to Ozaukee County residents and tourists who visit the County to take advantage of its surface water resources, particularly Lake Michigan. For these reasons it is important to locate public access points to lakes, rivers, and streams. Access points can be found in County and municipal parks adjacent to lakes, rivers, and streams, which often offer improvements such as fishing piers or platforms and canoe launches. Public access is also provided by public streets where they cross rivers and streams, and at the end of the platted but undeveloped street rights-of-way that end at a river, stream, or lake. Section 236.16(3) of the *Wisconsin Statutes* requires that public access ways at least 60 feet wide be provided at no more than half mile intervals in new subdivisions abutting navigable streams, rivers, and lakes. This requirement is often fulfilled by platting streets to the water line. Public access points to lakes, rivers, and streams in the County are shown on Map III-15 and listed on Table III-6. There are 16 public access points in the City of Port Washington planning area.

Floodplains and Shorelands

The floodplains of a river are the wide, gently sloping areas usually lying on both sides of a river or stream channel. The flow of a river onto its floodplain is a normal phenomenon and, in the absence of flood control

works, can be expected to occur periodically. For planning and regulatory purposes, floodplains are defined as those areas subject to inundation by the 100-year recurrence interval flood event. This event has a 1 percent chance of being equaled or exceeded in any given year. Floodplains are generally not well suited for urban development because of the flood hazard, the presence of high water tables, and soils poorly suited to urban uses.

Floodplains in Ozaukee County and the City of Port Washington planning area were identified as part of the Ozaukee County Flood Insurance Study (FIS)⁴ and the accompanying Flood Insurance Rate Map. Flood elevations and floodplain limits were identified through detailed studies along the Milwaukee River as part of the FIS. The FIS depicts “approximate” floodplains along streams and lakes where no detailed engineering studies were conducted. Subsequent to adoption of the FIS, detailed floodplain studies were conducted for Cedar Creek and a portion of Ulaos Creek.

The DNR initiated a “Map Modernization Program” in Ozaukee County in 2004 to update floodplain mapping throughout the County. As part of the program, additional detailed and “limited detailed” floodplain studies were conducted along priority streams and stream reaches. The DNR also adjusted approximate floodplain delineations countywide where no detailed studies have been conducted to better reflect existing stream locations and topographic mapping. The new floodplain delineations were approved by the DNR and FEMA on June 4, 2007. Ozaukee County and each city and village in the County, including the City of Port Washington, must update their zoning maps to reflect the new floodplain delineations by December 4, 2007. The new floodplain delineations developed by the DNR encompass 19,399 acres, or about 13 percent of the County and 12 percent of the County planning area.⁵ There are about 687 acres of floodplains in the City of Port Washington planning area, which encompass about 7.0 percent of the planning area.

Shorelands are defined by the *Wisconsin Statutes* as lands within the following distances from the ordinary high water mark of navigable waters: one thousand feet from a lake, pond, or flowage; and three hundred feet from a river or stream, or to the landward side of the floodplain, whichever distance is greater. In accordance with the requirements set forth in Chapters NR 115 (shoreland regulations) and NR 116 (floodplain regulations) of the *Wisconsin Administrative Code*, both the Ozaukee and Washington County shoreland and floodplain zoning ordinances restrict uses in wetlands located in the shorelands, and limit the uses allowed in the 100-year floodplain to prevent damage to structures and property and to protect floodwater conveyance and storage capacity of floodplains. The ordinances also restrict removal of vegetation and other activities in shoreland areas and require most structures to be set back a minimum of 75 feet from navigable waters. State law requires that counties administer shoreland and floodplain regulations in unincorporated areas. Shorelands in unincorporated portions of the Ozaukee County planning area are shown on Map V-7 in Chapter V of the Ozaukee County Comprehensive Plan.

Under Chapter NR 117 of the *Administrative Code*, cities and villages are required to restrict uses in wetlands five acres or larger located in the shoreland area. The provisions of NR 115, which regulate uses in unincorporated portions of the shoreland, apply in cities and villages only in shoreland areas annexed to a city or village after May 7, 1982. The same floodplain regulations set forth in NR 116 for unincorporated areas also apply to cities and villages. Each city and village, including the City of Port Washington, administers the floodplain regulations within its corporate limits.

Designated Waters

⁴ Documented in the Flood Insurance Study for Ozaukee County, Wisconsin, March 18, 1991, prepared by the Federal Emergency Management Agency.

⁵ The Washington County portion of the County planning area was not included in the Ozaukee County Map Modernization Program.

A Designated Water is a waterbody (river, stream, or lake) that has special designations that affect permit requirements for activities affecting the water body. The DNR developed the designated water classification system, which related directly to the Statutory or regulatory sections that govern activities that may be permitted in or adjacent to a waterbody or specific stream reaches. The designations may also be used to help determine the quality or significance of a waterbody. The classifications of specific waterbodies can be found on the DNR website at www.dnrmaps.wisconsin.gov/imf/imf.jsp?site=surfacewaterviewer.deswaters.

Designated waters are grouped into the following categories and subcategories:

- Areas of Special Natural Resource Interest. This category includes:
 - State Natural Areas
 - Trout Streams
 - Outstanding or exceptional resource waters
 - Waters inhabited by any endangered, threatened, or special concern species or unique ecological communities identified in the Natural Heritage Inventory
 - Waters in ecologically significant coastal wetlands along Lakes Michigan and Superior identified by the Coastal Wetlands of Wisconsin coastal management project
 - Federal and State waters designated as wild or scenic rivers
 - Wild rice lakes identified by the DNR and the Great Lakes Indian Fish and Wildlife Commission
- Public Rights Features. This category includes waterbodies identified by the DNR as critical sites for habitat navigation or scenic beauty.
- Priority Navigable Waters. This category includes:
 - Navigable waters, or portions thereof, identified by the DNR as outstanding or exceptional resource waters due to sensitive fish and aquatic habitat
 - Navigable waters, or portions thereof, identified as trout stream
 - Lakes less than 50 acres in size

Wetlands

Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration that is sufficient to support a prevalence of vegetation typically adopted for life in saturated soil conditions. As shown on Map III-13, wetlands occur in depressions, near the bottom of slopes, along lakeshores and stream banks, and on land areas that are poorly drained.

Wetlands are generally unsuited or poorly suited for most agricultural or urban development purposes. Wetlands do have important recreational and ecological values. Wetlands contribute to flood control and water quality enhancement, since such areas naturally serve to store excess runoff temporarily, thereby tending to reduce peak flows and to trap sediments, undesirable nutrients, and other water pollutants. Wetlands may also serve as groundwater recharge and discharge areas. Wetlands also provide breeding, nesting, resting, and feeding grounds for many forms of wildlife. Wetlands encompassed approximately 29 square miles, or about 11 percent of the County planning area in 2000. The wetlands shown on Map III-13 are those identified by SEWRPC as part of the inventory of land uses in the County in 2000. The SEWRPC land use inventories from 1963 through 2000 include wetlands of one acre or larger.

Table III-7 sets forth selected natural resource land coverage areas, including wetlands, in the County in 1970, 1980, 1990, and 2000. The area within wetlands and woodlands has increased slightly between 1970 and 2000, leading to a corresponding increase in the number of acres within primary environmental corridors, secondary

environmental corridors, and isolated natural resource areas.⁶ Wetlands encompassed approximately 765 acres, or about 7.8 percent of the City of Port Washington planning area in 2000.

[Note: An updated wetland inventory map for Ozaukee County, conducted by SEWRPC under contract with the DNR, was completed in 2007. The new inventory includes wetlands of ¼ acre or larger. This inventory is reflected on the 2035 planned land use map (Map VIII-8 in Chapter VIII in the Ozaukee County Comprehensive Plan) under the Wisconsin Wetland Inventory 2007 Overlay. Wetlands encompassed 950 acres, or 9.7 percent, of the City of Port Washington planning area according to the 2007 updated wetland inventory.]

Restored Wetlands

Over the past 20 years, Federal, State, and local government agencies have constructed 329 wetland restorations encompassing about 390 acres on private land in Ozaukee County.⁷ Their efforts are continuing with several additional wetlands appearing on the map each year through incentives such as those provided by the NRCS, United States Fish and Wildlife Service (USFWS), DNR, and County Priority Watershed and Soil and Water Resource Management Programs. These programs encourage landowners to remove highly erodible land from agricultural use and restore natural plant communities. The restoration program goal is to increase wildlife habitat and plant diversity, reduce soil erosion, improve water quality by filtering pollutants and sediment, and provide stormwater storage to reduce flooding. Wetland restorations completed through 2002 in the Ozaukee County planning area are shown on Map III-16. As of 2002, 39 wetland restorations encompassing 64.1 acres had been completed in the City of Port Washington planning area.

Groundwater Resources

An adequate supply of high quality groundwater is essential if used for domestic consumption. Like surface water, groundwater is susceptible to depletion and deterioration. The quality of groundwater can be reduced by the loss of recharge areas, excessive or overly concentrated pumping, and changes in ground cover. In addition, groundwater quality is subject to degradation from onsite waste treatment systems, surface water pollution, improper agricultural practices, and other soil and water pollutants. Identifying sources of groundwater and areas susceptible to groundwater contamination is important in proper land use planning to prevent adversely affecting the availability and quality of groundwater.

Ozaukee County has seen an increase in overall water consumption and groundwater consumption in recent decades. Total water consumption (surface water and groundwater) increased from 7,850,000 gallons per day to 9,320,000 gallons per day, a 19 percent increase, between 1979 and 2000. Groundwater consumption in the County has increased from 6,660,000 gallons per day to 7,800,000 gallons per day, a 17 percent increase, between 1979 and 2000. Over 84 percent of the total water used per day in Ozaukee County was groundwater in 2000.⁸

The regional groundwater resources report prepared by SEWRPC⁹ indicates that there is an adequate supply of ground water in the shallow aquifer for Ozaukee County and the Region as a whole. The shallow aquifer is the source of water for most wells in the County. Map III-17 shows the depth to the water table, which is the upper

⁶ A detailed description of the process for delineating environmental corridors is presented in SEWRPC Technical Record Vol. 4, No. 2, Refining the Delineation of Environmental Corridors in Southeastern Wisconsin, March 1981.

⁷ There are no wetland mitigation sites located in the Ozaukee County planning area.

⁸ Water consumption data will be updated to 2005 upon completion of the regional water supply study in late 2008.

⁹ Documented in SEWRPC Technical Report No. 37, Groundwater Resources of Southeastern Wisconsin, June 2002.

free surface of the shallow aquifer, for Ozaukee County. The water table generally replicates the land surface and is higher under topographic highs and lower, but nearer land surface, under topographic lows.

The regional groundwater resources report also suggests that there is an imbalance in supply and demand in some parts of the Region in the deep aquifer, which is an additional source of water for municipal wells in the Region. This imbalance occurs in Waukesha County. This imbalance demonstrates the importance of both the future shallow aquifer water supply and deep aquifer water supply in Ozaukee County, as groundwater is currently the main source of water for daily use in Ozaukee County.

Groundwater levels are replenished through water infiltration in surface areas called groundwater recharge areas. Groundwater recharge areas are those areas where the groundwater flow is downward. On a regional level, groundwater recharge areas tend to be in upland areas or areas of topographic highpoints from which flow paths originate and diverge. These locations are groundwater divides, across which there is no horizontal flow of groundwater. The major groundwater divide in the Region affecting Ozaukee County runs through western and central Washington County, approximately along the surface water sub-continental divide. In Ozaukee County groundwater generally flows to the east and southeast towards the Milwaukee River and Lake Michigan. Locally, the recharge potential of an area is dependent on a number of factors, including soil permeability and percolation rates, slope, the direction of groundwater flow, land use, and, the permeability of the subsurface materials above the water table. Groundwater recharge areas are identified in the regional water supply study. Groundwater recharge areas in the Region are shown on Map VII-5 in Chapter VII of the Ozaukee County Comprehensive Plan.

The deeper sandstone aquifer, previously referred to as the deep aquifer, is separated from the shallow aquifer by a relatively impervious barrier, the Maquoketa shale formation. The primary recharge area for the deep aquifer is located in western Waukesha, Walworth, and Washington Counties. While the primary recharge area lies in the southwestern portion of the Southeastern Wisconsin Region, it does appear that the shallow aquifer and deep aquifer are hydraulically connected, highlighting the importance of regional groundwater flow.

Another factor that is critical to maintaining a high quality groundwater supply is determining which areas of the County are most vulnerable to groundwater contamination. Land use planning can be used to steer incompatible uses away from these areas once they have been identified.

The most commonly used methods used to evaluate groundwater contamination potential are overlay methods combining several major physical factors. The system for evaluation of contamination potential used by SEWRPC in its study of groundwater resources in Southeastern Wisconsin was based on five parameters: soil characteristics, unsaturated zone thickness, permeability of vertical sequences in the unsaturated zone, recharge to groundwater, represented by soil percolation, and aquifer characteristics. SEWRPC has evaluated the contamination potential of shallow groundwater, which is shown on Map III-18. An evaluation of the contamination potential of deep aquifers is not yet available due to data limitations. Table III-8 sets forth the combination of parameters for contamination potential and the number of acres encompassed by each final contamination potential ranking in the Ozaukee County planning area. The information shown on the map and table applies where contaminants are placed on the ground surface, but not where contaminants are introduced directly into an aquifer through discharge to surface waters or directly into the groundwater.

All water in the City of Port Washington comes from Lake Michigan rather than groundwater; however, it is important to identify groundwater recharge areas within the City planning area to help ensure an adequate supply of groundwater for consumption and use in other areas of Ozaukee County.

Forest Resources

Woodlands

With sound management, woodlands can serve a variety of beneficial functions. In addition to contributing to clean air and water and regulating surface water runoff, woodlands help maintain a diversity of plant and animal life. The destruction of woodlands, particularly on hillsides, can contribute to excessive stormwater runoff, siltation of lakes and streams, and loss of wildlife habitat. For the purposes of this report, woodlands are defined as upland¹⁰ areas of one acre or more in area, having 17 or more trees per acre, each deciduous tree measuring at least four inches in diameter 4.5 feet above the ground, and having canopy coverage of 50 percent or greater. Coniferous tree plantations and reforestation projects are also classified as woodlands. Table III-7 sets forth selected natural resource land coverage areas, including woodlands, in the County in 1970, 1980, 1990, and 2000. As shown on Map III-19, woodlands encompassed 343 acres, or about 3.5 percent of the City of Port Washington planning area, in 2000.

Managed Forest Lands

The Managed Forest Law (MFL) is an incentive program intended to encourage sustainable forestry on private woodlands in Wisconsin with a primary focus on timber production. The MFL offers private owners of woodlands a reduced property tax rate as an incentive to participate. All Wisconsin private woodland owners with at least 10 acres of contiguous forestland in the same city, village, or civil town are eligible to apply provided the lands meet the other criteria: 1) have a minimum of 80 percent of the land in forest, 2) the land is primarily used for growing forest products (croplands, pastures, orchards, etc. are not eligible), and 3) there are no recreational uses that interfere with forest management.

Participants enter into a 25 or 50 year contract. If an agreement is terminated before its end, a withdraw penalty is assessed. Starting with 2008 entries, applications include an approvable management plan, written by a Certified Plan Writer. The application fee will be \$20.00. If the enrolled property is sold before the agreement period has expired, the new owner can choose one of three options: 1) complete the agreement period with the current plan, 2) adjust the plan to meet their goals and objectives, 3) withdraw the land and pay the penalty. Currently, a landowner can close 160 acres per municipality to the public. Any land enrolled over that 160 acres will be open to the public. The tax benefit is substantially greater for enrolled acreage that is open to the public. In 2005, there were 67 participants enrolled in the MFL program in Ozaukee County, encompassing about 1,677 acres. About 1,305 acres were closed to the public and 372 acres were open to the public, as show on Map III-19.

Natural Areas and Critical Species Habitat Sites

A comprehensive inventory of natural resources and important plant and animal habitats was conducted by SEWRPC in 1994 as part of the regional natural areas and critical species habitat protection and management study. The inventory systematically identified all remaining high-quality natural areas, critical species habitat, and sites having geological significance within the Region. Ownership of identified natural areas and critical species habitat sites in Ozaukee County and the City of Port Washington planning area were reviewed and updated in 2005.

Natural Areas

Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. Natural areas are classified into one of three categories: natural areas of statewide or greater significance (NA-1), natural areas of countywide or regional significance (NA-2), and natural areas of local significance (NA-3). Classification of an area into one of these three categories is based on consideration of the diversity of plant and animal species and community type present, the structure and

¹⁰ *Lowland woods, such as tamarack swamps, are classified as wetlands.*

integrity of the native plant or animal community, the uniqueness of the natural features, the size of the site, and the educational value.

Fifty natural areas lying wholly or partially in the Ozaukee County planning area have been identified. These sites, which together encompass 7,446 acres, or about 5 percent of the County planning area, are described in Table III-9. A total of two natural areas, encompassing about 356 acres, have been identified in the City of Port Washington planning area and are shown on Map II-20. The first natural area is Cedar Heights Gorge, a NA-3 site encompassing a total of 9 acres. The second natural area is the Ulao Lowland Forest, a NA-3 site encompassing a total of 347 acres. Both natural areas are more fully described in Table III-9.

Critical Species Habitat and Aquatic Sites

Critical species habitat sites consist of areas outside natural areas which are important for their ability to support rare, threatened, or endangered plant or animal species. Such areas constitute “critical” habitat considered to be important to the survival of a particular species or group of species of special concern. Seven sites supporting rare or threatened plant and animal species have been identified in the Ozaukee County planning area. These sites encompass an area of 490 acres, less than 1 percent of the County planning area, and are described in Table III-10. One site supporting rare or threatened plant and animal species has been identified in the City of Port Washington planning area. This site is the Sauk Creek Nature Preserve which encompasses an area of 13 acres, as shown on Map III-21. The species of concern located in the critical species habitat site is the forked aster.

There are also 30 aquatic sites supporting threatened or rare fish, herptile, or mussel species in the Ozaukee County planning area. There are 70.1 stream miles and 306 lake acres of critical aquatic habitat in the County planning area, which are described in Table III-11. There are no aquatic sites supporting threatened or rare fish, herptile, or mussel species in the City planning area.

Two additional endangered species have been identified in Ozaukee County since the regional natural areas plan was adopted in 1994. The DNR has identified much of Ozaukee County, with the exception of the Towns of Belgium and Fredonia, as potential habitat for the Butler’s garter snake. The area in and around Cedarburg Bog has been identified by the U.S. Fish and Wildlife Service as an important habitat for the Hines Emerald Dragonfly. Landowners in these areas should contact the DNR prior to beginning any land-disturbing activities.

Wisconsin’s Wildlife Action Plan

The Wisconsin Wildlife Action Plan is a comprehensive resource developed by the Department of Natural Resources (DNR) that can be used to focus efforts on conserving species that have been identified as “Species of Greatest Conservation Need.” Wisconsin’s Species of Greatest Conservation Need occur in different locations throughout the State, depending on a variety of factors. The opportunities to protect or restore habitats necessary for supporting these species are also different depending on the ecological landscapes present in a given area (different landscapes include various natural communities that support habitat for specific types of species.) Ozaukee County is comprised of three ecological landscapes, including Central Lake Michigan Coastal, Southeast Glacial Plains, and Southern Lake Michigan Coastal, which are shown on Map III-22. The City of Port Washington planning area is located in the Southern Lake Michigan Coastal ecological landscape. Ecological priorities that identify the natural communities in each of the three ecological landscapes present in the County, which support a variety of species of greatest conservation need, have been outlined in the wildlife action plan. The priorities were developed based on the probability that a species will occur in a given landscape, the degree to which a species is associated with a particular natural community, and the degree to which there are opportunities for sustaining a given natural community in a given ecological landscape.^{||} Priority natural communities present in Ozaukee County are listed in Table III-12.

^{||} Conservation actions for each Species of Greatest Conservation need are set forth in the Wisconsin Wildlife Action Plan, available at www.dnr.wi.gov/org/land/er/wwap.

Wisconsin Important Bird Areas

An important bird area (IBA) is a site that provides essential habitat for one or more species of breeding or non-breeding birds. Sites are distinguishable in character, habitat, or ornithological importance from surrounding areas. In general, IBAs exist as an actual or potential protected area with the potential to be managed in some way for birds and general environmental conservation. The sites can be publicly or privately owned. The site should be large enough to supply most of the habitat requirements of the birds during the season for which the site is important. A site must support species of conservation concern or species that are vulnerable because they are not widely distributed; their populations are concentrated in one general habitat type or they congregate together for breeding, feeding, or migration to be considered an IBA. The IBA program is a voluntary program that links local and state conservation efforts to national and international efforts. In Wisconsin, the program is implemented under the Wisconsin Bird Initiative. Approved IBAs located in the Ozaukee County planning area include Ozaukee Bight Diving Duck Preserve and the Harrington Beach Diving Duck Preserve. In addition, the Cedarburg Bog has been nominated to become an IBA site (as of 2007). These sites are shown on Map III-23.

Stream Passage Impediments and Aquatic Habitat Fragmentation

Land use changes in Ozaukee County have resulted in a variety of artificial barriers that preclude aquatic life passage and isolate existing habitats. These barriers, or impediments, include dams, impassable culverts, accumulated debris, and other artificial barriers. Barriers fragment waterways, isolate important aquatic habitats in tributary watersheds, and prevent some fish from reaching critical habitats that are otherwise intact. Restoring habitat access will likely cost less and be more productive than creating artificial habitat. Removing the impediments will also improve aquatic communities and increase the natural resources available in Ozaukee County. The first step toward reducing stream fragmentation is inventorying the impediments.

Northern Environmental Technologies, Inc. identified, evaluated, and inventoried impediments to Northern Pike (*Esox lucius*) passage in Ozaukee County in the summer and fall of 2006. The study included both remote and field investigation of barriers to Northern Pike passage and isolated habitats potentially suitable for Northern Pike spawning in 11 streams tributary to the Milwaukee River and Lake Michigan. As shown on Table III-13 and Map III-24, 213 potential impediments were identified and 100 were confirmed as suspected barriers to Northern Pike passage. In addition, 29 areas of potential suitable habitat were confirmed.¹² All of the barriers fell into one of three general categories:

- Naturally Occurring:
 - Log, debris, and sediment jams
 - High-gradient reaches
 - Stream infiltration to groundwater
 - Channel dispersion in wetlands
- Indirectly resulting from human actions:
 - Channel loss to excess sediment aggradation in agricultural areas
 - Entrenchment resulting from channelization and development
 - Channel loss to densely ingrown invasive vegetation
- Directly resulting from human actions:
 - Small dams
 - Improperly designed or installed culverts
 - Pervious fill deposits
 - Artificially lined channels

¹² *An individual summary of suspected barriers and potential habitats in each stream is included in the Northern Environmental Technologies, Inc. report titled Stream Passage Impediments and Aquatic Habitat Fragmentation Inventory-Milwaukee River and Lake Michigan Tributary Streams, Ozaukee County, Wisconsin, November 16, 2005, and amended on February 13, 2007.*

- Channel-constricting bridge abutments
- Debris jams and channel aggradation at crossings

Pre-settlement Vegetation

European settlement of Ozaukee County radically altered the pre-settlement landscape. Baseline information about the landscape prior to widespread settlement is necessary to gauge the magnitude of this change. Studies of remnants of natural vegetation provide clues to pre-settlement conditions, but these remnants are frequently small and widely scattered. Historical accounts of the early explorers, naturalists, traders, and settlers tend to be fragmentary and anecdotal, and thus are of limited usefulness in describing the pre-settlement landscape; however, many scientific researchers have found the original field notes from the U.S. Public Land Survey provide a satisfactory basis for describing pre-settlement vegetation. The Survey notes were recorded for Ozaukee County between 1834 and 1836, prior to widespread European settlement of the area. The notes are considered to be a reliable data base for assessing general changes in vegetation composition because the data was collected in a uniform manner to give systematic coverage of extensive areas. The pre-settlement upland vegetation of Ozaukee County consisted of a mixture of American beech, sugar maple, basswood, black and white oak, and white ash. Lowland vegetation consisted of a mixture of black ash, American elm, and tamarack. Pre-settlement vegetation in Ozaukee County is shown on Map III-25.

Invasive Plant Species

Plants that occur outside of the area where they evolved are considered introduced, exotic, or non-native. Occasionally when an exotic plant is introduced into an area where it did not previously exist, it is able to flourish and quickly dominate its surroundings. An exotic species becomes an invasive species in these instances. Invasive plant species out-compete native plants, and may degrade fish and wildlife habitat, reduce agricultural yields, and hinder recreational opportunities. The first step towards controlling invasive plant species in Ozaukee County is to inventory species present in the County. Invasive plant species widely found in Ozaukee County include Purple Loosestrife and Reed Canary Grass, as shown on Map III-26. Figure III-1 includes a statewide list of invasive plant species.

Purple Loosestrife is a perennial that grows up to five feet in height when mature and has pinkish-purple flowers that bloom from mid-July through August. This species has been used as a garden flower in the past; however several states have banned its sale. It can germinate in moist soils and once established, survive shallow flooding. Purple Loosestrife threatens the integrity of wetlands because the seeds germinate at such a high density they out-compete native seedlings. The combination of prolific seed production and a lack of natural herbivores and pathogens often allows it to quickly displace diverse wetland plant communities.

Reed Canary Grass is a large, coarse, perennial grass that typically grows up to five feet in height. It prefers moist to wet open areas, but is also tolerant of seasonally inundated soils. It has been used as a forage crop, particularly in moist soils, in the past. Its tall stature and rapid early growth allow it to monopolize light, water, and nutrient resources. Due to these characteristics, the grass often forms dense monocultures and greatly reduces or eliminates native plant species in wetlands. Upon colonization, it can persist and prevent natural and human-assisted re-colonization of native plant species.

Environmental Corridors and Isolated Natural Resource Areas

One of the most important tasks completed under the regional planning program for Southeastern Wisconsin has been the identification and delineation of those areas in which concentrations of the best remaining elements of the natural resource base occur. It has been recognized that preservation of these areas is essential to both the maintenance of the overall environmental quality of the region and to the continued provision of the amenities required to maintain a high quality of life for residents.

Seven elements of the natural resource base are considered essential to the maintenance of the ecological balance and the overall quality of life in the Region, and served as the basis for identifying the environmental corridor network. These seven elements are: 1) lakes, rivers, and streams and associated shorelands and floodplains; 2) wetlands; 3) woodlands; 4) prairies; 5) wildlife habitat areas; 6) wet, poorly drained, and organic soils; and 7) rugged terrain and high relief topography. In addition, there are certain other features which, although not a part of the natural resource base, are closely related to the natural resource base and were used to identify areas with recreational, aesthetic, ecological, and natural value. These features include existing park and open space sites, potential park and open space sites, historic sites, scenic areas and vistas, and natural areas.

The mapping of these 12 natural resource and resource-related elements results in a concentration of such elements in an essentially linear pattern of relatively narrow, elongated areas which have been termed "environmental corridors" by SEWRPC. Primary environmental corridors include a wide variety of the most important natural resources and are at least 400 acres in size, two miles long, and 200 feet wide. Secondary environmental corridors serve to link primary environmental corridors, or encompass areas containing concentrations of natural resources between 100 and 400 acres in size. Where secondary environmental corridors serve to link primary corridors, no minimum area or length criteria apply. Secondary environmental corridors that do not connect primary corridors must be at least 100 acres in size and one mile long. An isolated concentration of natural resource features, encompassing at least five acres but not large enough to meet the size or length criteria for primary or secondary environmental corridors, is referred to as an isolated natural resource area. Environmental corridors and isolated natural resource areas in the City of Port Washington planning area in 2000 are shown on Map III-27.

The preservation of environmental corridors and isolated natural resource areas in essentially natural, open uses can assist in flood-flow attenuation, water pollution abatement, noise pollution abatement, and maintenance of air quality. Corridor preservation is important to the movement of wildlife and for the movement and dispersal of seeds for a variety of plant species. In addition, because of the many interacting relationships between living organisms and their environment, the destruction and deterioration of any one element of the natural resource base may lead to a chain reaction of deterioration and destruction. For example, the destruction of woodland cover may result in soil erosion and stream siltation, more rapid stormwater runoff and attendant increased flood flows and stages, as well as destruction of wildlife habitat. Although the effects of any single environmental change may not be overwhelming, the combined effects will eventually create serious environmental and developmental problems. These problems include flooding, water pollution, deterioration and destruction of wildlife habitat, loss of groundwater recharge, as well as a decline in the scenic beauty of the planning area. The importance of maintaining the integrity of the remaining environmental corridors and isolated natural resource areas thus becomes apparent.

As shown on Map III-27, the primary environmental corridors in the City of Port Washington planning area are located along major streams, along Lake Michigan, around several lakes, and in large wetland areas. In 2000, about 1,022 acres of the City of Port Washington planning area were encompassed within primary environmental corridors. Secondary environmental corridors are located chiefly along the smaller perennial streams and intermittent streams in the planning area. About 90 acres of the planning area were encompassed within secondary environmental corridors in 2000. Isolated natural resource areas within the planning area include a geographically well-distributed variety of isolated wetlands, woodlands, and wildlife habitat. These areas encompassed about 268 acres of the planning area in 2000. Table III-7 sets forth selected natural resource land coverage, including environmental corridors, in the County in 1970, 1980, 1990, and 2000. A map of planned environmental corridors and isolated natural resource areas in the City planning area for 2035 is presented in Chapter VII.

Park and Open Space Sites

A comprehensive region wide inventory of park and open space sites was conducted in 1973 under the initial regional park and open space planning program conducted by SEWRPC. The inventory is updated periodically, and was updated in 2007 as part of this planning process.

The 2007 inventory identified all park and open space sites owned by a public agency, including Federal, State, County, and local units of government and school districts. The inventory also included privately owned outdoor recreation sites such as golf courses, campgrounds, boating access sites, hunting clubs, group camps, and special use outdoor recreation sites. Sites owned by nonprofit conservation organizations, such as the Ozaukee Washington Land Trust, were also identified. In 2007, there were 11,515 acres of park and open space land encompassing about 7 percent of the Ozaukee County planning area in fee simple ownership. An additional 1,533 acres of land were under conservation or other easements intended to protect the natural resources of a site. Information on park and open space sites in the City of Port Washington planning area is provided in the following sections.

Park and Open Space Sites Owned by Ozaukee County

Park and open space sites owned by Ozaukee County in the Ozaukee County planning area in 2007 are listed in Table III-14 and shown on Map III-28. In 2007, the County owned 14 park and open space sites encompassing 1,204 acres. There were no County parks located within the City of Port Washington in 2007.

Park and Open Space Sites Owned by the State of Wisconsin

Park and open space sites owned by the State of Wisconsin in the City of Port Washington in 2007 are listed in Table III-15 and shown on Map III-28. In 2007, there were 11 State owned park and open space sites encompassing 2,938 acres in the Ozaukee County planning area.

The Wisconsin Department of Natural Resources has acquired large areas of park and open space lands in the County planning area for a variety of resource protection and recreational purposes. Sites acquired for natural resource preservation and limited recreational purposes include the Cedarburg Habitat Preservation Area, Cedarburg Bog State Natural Area, and one scattered wetland. Another DNR owned site, Harrington Beach State Park, has more intensive recreational activities such as swimming, camping, picnicking, and trail facilities. Map III-28 also reflects project boundaries approved by the Wisconsin Natural Resources Board for additional acquisitions associated with State park, wildlife, and heritage areas. Lands within approved project boundaries are intended to be acquired by the DNR on a “willing seller-willing buyer” basis, for recreational or open space purposes as funding permits. There were no Wisconsin DNR sites located within the City of Port Washington as of 2007.

U.S. Fish and Wildlife Service Sites

Table III-15 identifies the five open space sites in the Ozaukee County planning area owned by the U.S. Fish and Wildlife Service, which encompassed 517 acres, in 2005. None of these sites were located in the City of Port Washington, as shown on Map III-28.

Park and Open Space Sites Owned by Local Governments and Public School Districts

In addition to County, State, and Federally owned park and open space sites, there were 31 park and open space sites owned by local governments and public schools in the City of Port Washington planning area in 2005. Those sites, listed on Table III-16, encompassed 280 acres, or about 2.9 percent of the City. The City of Port Washington owned 27 of the park and open space sites which encompassed 252 acres. Four of the park and open sites, which encompassed 19 acres, were owned by the Port Washington-Saukville School District. The acreage attributed to school district sites includes only those portions of the site used for recreational purposes or in open space. Map III-29 shows the location of park and open space sites owned by the local government and public schools in the City of Port Washington planning area.

Private and Public Interest Resource Oriented Park and Open Space Sites

In 2005, there were 2 privately owned park and open space sites located in the City of Port Washington planning area encompassing 9 acres, as depicted on Map III-30 and shown of Table III-16. There was one organizational site at St. Peter's School encompassing 9 acres and one private site, a wayside, which encompassed one acre.

In 2005, one additional site in the City of Port Washington, as shown on Map III-30 and Table III-17, was owned by a private organization for resource preservation purposes. The Sauk Creek Nature Preserve, which encompasses 31 acres, was owned by the Ozaukee Washington Land Trust.

Lands under Protective Easements

Several open space and environmentally sensitive sites in the Ozaukee County planning area are protected under conservation easements. These easements are typically voluntary contracts between a private landowner and a land trust or governmental body that limit, or in some cases prohibit, future development of the parcel. With the establishment of a conservation easement, the property owner sells or donates the development rights for the property to a land trust or governmental agency, but retains ownership. The owner is not prohibited from selling the property, but future owners must also abide by the terms of the conservation easement. The purchaser of the easement is responsible for monitoring and enforcing the easement agreement for the property. Conservation easements do not require public access to the property, although public access is generally required if Wisconsin stewardship funds or other DNR grant funds are used to acquire the property. As shown on Map III-31 and Table III-18, there were no conservation easements located in the City of Port Washington in 2007.

Climate

Its midcontinental location gives Ozaukee County and the City of Port Washington planning area a continental climate that spans four seasons. Summers generally occur during the months of June, July, and August. They are relatively warm, with occasional periods of hot, humid weather and sporadic periods of cool weather. Lake Michigan often has a cooling effect on the City planning area during the summer. Winters are cold and generally occur during the months of December, January, and February. Winter weather conditions can also be experienced during the months of November and March in some years. Autumn and spring are transitional weather periods when widely varying temperatures and long periods of precipitation are common. The median growing season, the number of days between the last freeze in the spring and the first freeze in the fall, is 170 days and can range from 150 to 192 days.

Precipitation in the planning area can occur in the form of rain, sleet, hail, and snow and ranges from gentle showers to destructive thunderstorms. The more pronounced weather events, such as severe thunderstorms and tornadoes, can cause major property and crop damage, inundation of poorly drained areas, and lake and stream flooding. Table III-19 sets forth the temperature and precipitation characteristics of Ozaukee County.

Air Quality

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set national ambient air quality standards (NAAQS) for six criteria pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides) which are considered harmful to public health and the environment. Areas not meeting the NAAQS for one or more of the criteria pollutants are designated as nonattainment areas by the EPA. In areas where observed pollutant levels exceed the established NAAQS and which are designated as "nonattainment" areas by the EPA, growth and development patterns may be constrained. For example, major sources of pollutants seeking to locate or expand in a designated nonattainment area, or close enough to impact upon it, must apply emission control technologies. In addition, new or expanding industries may be required to obtain a greater than one-for-one reduction in emissions from other sources in the nonattainment area so as to provide a net improvement in ambient air quality. Nonattainment area designation may therefore create an economic disincentive for industry with significant emission levels to locating or expanding within or near the boundaries of such an area. In order to eliminate this disincentive and relieve the potential constraint on development, it is

necessary to demonstrate compliance with the NAAQS and petition the EPA for redesignation of the nonattainment areas.

The Southeastern Wisconsin Region currently meets all but the ozone NAAQS, and the EPA has designated a single six-county ozone nonattainment area within the Region which is made up of Kenosha, Milwaukee, Ozaukee, Racine, Washington, and Waukesha Counties. Ozone is formed when precursor pollutants, such as volatile organic compounds and nitrogen oxides, react in the presence of sunlight. The ozone air quality problem within the Region is a complex problem because ozone is meteorologically dependent. In addition, the ozone problem in the Region is believed to be attributable in large part to precursor emissions which are generated in the large urban areas located to the south and southeast and carried by prevailing winds into the Region. The ozone problem thus remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state abatement effort.

Over the past decade, the combination of local controls and offsets implemented within and outside the Region, along with national vehicle emissions control requirements, have resulted in a significant improvement in ambient air quality within the Region as well as nationally, and projections of future emissions indicate a continued decline in precursor emissions and a continued improvement in air quality. In fact, monitoring data now show the six-county nonattainment area in the Region is meeting ozone standards. As a result, the Wisconsin Department of Natural Resources is requesting that the EPA reclassify the six-county ozone nonattainment area in the Region as an attainment area. If the redesignation request is approved by the EPA, the economic disincentive – having to offset emissions produced by reducing other emissions in the nonattainment area – for major sources to locate within the nonattainment area should be reduced. It should be noted that all emission controls and programs (vehicle inspection and reformulated gas, for example) currently in place would be required to remain in place.

CULTURAL RESOURCES

The term cultural resource encompasses historic buildings, structures, and sites and archeological sites as well as venues and events that promote the arts and Ozaukee County's heritage. Cultural resources in the City of Port Washington and Ozaukee County have important recreational and educational value. They help to provide the County and each of its distinct communities with a sense of heritage, identity, and civic pride. Resources such as historical and archeological sites, historic districts, museums, festivals, and cultural events can also provide economic opportunities for communities and their residents. For these reasons it is important to identify historical and archeological sites located in the City of Port Washington and the Ozaukee County planning area. It is also important to include an inventory of museums and cultural performance venues. While such venues may not be historical or archeological sites in themselves, they are cultural resources because they may house items of historical or archeological importance, contain historical records and information, be an educational resource, be an outlet for performances of cultural significance, and enhance the quality of life in the City and the County.

Historical Resources

National and State Registers of Historic Places

In 2005, there were 32 historic places and districts in the Ozaukee County planning area listed on the National Register of Historic Places and the State Register of Historic Places, as set forth in Table III-20 and shown on Map III-32. In 2005, there were 7 historic places and districts in the City of Port Washington listed on the National Register of Historic Places and the State Register of Historical Places. These historic places and districts include the Edward Dodge House, the Old Ozaukee County Courthouse, St. Mary's Roman Catholic Church, the Harry W. Bolens House, the Hoffman House Hotel, the Port Washington Light Station, and the Port Washington Downtown Historic District.

In most cases, a historic place or district is listed on both the National Register and on the State Register. After the State Register was created in 1991, all properties that are nominated for the National Register must first go

through the State Register review process. Upon approval by the State review board, a site is listed on the State Register of Historic Places and recommended to the National Park Service for review and listing on the National Register of Historic Places. The only exceptions are Federally owned properties. These properties may be nominated for the National Register directly by the National Park Service. Of the 32 historic places and districts listed on the National and State Registers in the Ozaukee County planning area, 27 are historic buildings or structures, five are historic districts, and one is a shipwreck. Sites listed on the National Register of Historic Places may be eligible for a 25 percent Federal tax credit. Information regarding the procedure for nominating a site to the National and State Registers of Historic Places is available on the Wisconsin Historical Society website at www.wisconsinhistory.org/hp/register.

The 32 historic places and districts listed on the National and State registers of historic places are only a small fraction of the buildings, structures, and districts listed in the Wisconsin Architecture and History Inventory located in the Ozaukee County planning area. The Wisconsin Architecture and History Inventory is a database administered by the State Historical Society of Wisconsin which contains historical and architectural information on approximately 120,000 properties Statewide. The listed sites have architectural or historical characteristics that may make them eligible for listing on the National and State registers of historic places. In 2005, there were 2,046 properties in Ozaukee County included in the Wisconsin Architecture and History Inventory. The inventory can be accessed through the State of Wisconsin Historical Society website at www.wisconsinhistory.org/ahi.

An intensive historic preservation survey was conducted by the City of Port Washington in 1998 under the provisions of the National Historic Preservation Act of 1966. The purpose of this survey was to identify all resources that were potentially eligible for listing on the National Register of Historic Places and to provide governmental agencies with a comprehensive data base that includes all historic resources within the City. The City of Port Washington survey ultimately examined 445 individual resources. Of these, 21 individual buildings and building complexes, four historic residential districts containing 61 individual buildings, and a 45 building downtown commercial historic district were identified as having potential for listing on the National Register. After completion of the survey, the Port Washington Light Station and the Port Washington Downtown Historic District were listed on the State and National Registers on September 29, 1999 and September 8, 2000, respectively.

Local Landmarks

In addition to those historic sites and districts nominated to the National and State registers of historic places, there are 99 sites in the Ozaukee County planning area which have been designated as local landmarks by local governments. Local landmarks are set forth in Table III-21 and Map III-33. None of these local landmarks are located in the City of Port Washington. A local government is authorized to designate local landmarks after a landmarks commission or historic preservation commission has been established by local ordinance. Landmark commissions and historic preservation commissions are typically seven to nine member boards that review applications for landmark status and may also review proposed alterations to historic properties or properties located in historic districts. Landmark and historic preservation commissions may also designate local historic districts; however, designation of districts typically requires approval from the local governing body. The City of Port Washington has established a historic preservation commission, but has not yet designated any local landmarks.

State Historical Markers

The State Historical Society of Wisconsin also administers a historical marker program. Interested parties can apply for a historical marker with the State Historical Society's Division of Historic Preservation. The applicant must be able to pay for the marker, maintain the marker, and have permission from the owners of the land where the marker is to be erected. The Division of Historic Preservation will consider applications for markers that describe any one of the following aspects of Wisconsin's history: history, architecture, culture, archaeology, ethnic associations, geology, natural history, or legends. As shown on Map III-34, there were 12 historical

markers in Ozaukee County as of 2006. The title and location of each marker is set forth in Table III-22. One of these historical markers was located in the City of Port Washington. The historical marker was located at the Wisconsin Chair Company Fire site.

Heritage Trails

The Green Bay Ethnic Heritage Trail is a 156 mile long Wisconsin State Heritage Trail that extends from the Illinois-Wisconsin State Line to Green Bay. The Trail follows the route of a Native American trail that was converted to a military road in 1835. The military road extended from Fort Dearborn in what is now Chicago to Fort Howard in what is now Green Bay. The early road was used by many immigrants who settled in Wisconsin. In Ozaukee County, the Trail extends from north to south and showcases the scenic beauty and heritage resources of the County. Various historical markers are located along the Trail. The route of the Heritage Trail is generally located on Green Bay Road in the southern part of the County and on CTH LL in the northern part, as shown on Map III-34.

The State has also established a Maritime Trail in and along Lake Michigan. Several points of interest are located in waters off Ozaukee County, including shipwrecks described later in this section.

Additional Historic Sites in Ozaukee County

The HEDCR Workgroup, CAC, and CPB members have identified several additional historical sites that contribute to the heritage and economy of Ozaukee County. Many of these sites have not been designated as National Register sites, State Register sites, local landmarks, State historical markers, or State heritage trails. The sites are described in the following paragraphs.

Shipwrecks

Almost 20 shipwrecks located in Lake Michigan off the Ozaukee County shoreline have been inventoried in the State Historical Society Shipwreck database. These sites are in addition to the Niagara, which is on the National Register of Historic Sites and has a Wisconsin Historical Society mooring buoy to mark its location. Table III-23 sets forth the date of each shipwreck and the type of vessel. The earliest shipwreck was the Lexington, a steam paddle ship, in 1850. The last shipwreck was the Senator, a steam screw ship, in 1929. Additional information about Lake Michigan shipwrecks off the Ozaukee County shore can be found on the Wisconsin Historical Society website at www.maritimetrails.org/research.cfm. In addition, the Niagara buoy and several other maritime related sites in Ozaukee County, listed in Table III-24 and shown on Map III-35, are points of interest along the Mid Lake Michigan Region State Maritime Trail.

Judge Eghart House

The Judge Eghart house was built in 1872. Judge Leopold Eghart bought the property in 1881. The Eghart family continued to reside at the property until the late 1960's. To prevent the house from being razed, a private group requested that the City of Port Washington preserve it as a link to the City's past. The house has been restored and furnished as an example of early Victorian architecture through fundraising and volunteer efforts. The house is maintained by the W.J. Niederkorn Museum and Art Center and is open for tours on Sundays from 1:00 p.m. to 4:00 p.m., Memorial Day through Labor Day. It is located at next to the W.J. Niederkorn Library on the Corner of Grand Avenue and Webster Street in the City of Port Washington.

Port Washington Historic Walking Tours

The Historic City Center Tour and Old Town Port Tour are self guided historic walking tour routes located in the City of Port Washington. Both tours begin on the lakefront and include various historic commercial and residential structures. The Historic City Center Tour also includes the Port Washington Light House and St. Mary's Catholic Church. Maps of the tour routes and additional information about the sites located on each tour are available on the City of Port Washington website at www.ci.port-washington.wi.us.

Wisconsin Chair Factory

The Wisconsin Chair Company was organized in 1889 and quickly became one of the largest employers in the County. The company survived the financial downturn of 1893; however, the factory was destroyed by fire in 1899. The company immediately rebuilt and gained recognition by continuing to employ large numbers of workers through the depression of the 1930's. The company finally went out of business in 1959 and the factory has since been demolished. The location of the former factory is now the site of the Wisconsin Chair Company Fire State Historical Marker on the Lake Michigan shoreline in downtown Port Washington.

Paramount Records

The Wisconsin Chair Company (WCC) produced the cabinets that housed the phonographs invented by Thomas Edison in the early 1900's. The WCC was approached for space to continue the manufacturing of the phonographs after a 1914 fire destroyed the original manufacturing plant in New Jersey. A building in the Port Washington complex was provided for the phonograph operation in return for a license allowing WCC to sell its own version of the phonograph. The WCC then created a division known as the New York Recording Lab (NYRL) that manufactured records, which were given away with a purchase of the new WCC phonograph.

The new record pressing plant was built in the Village of Grafton along the Milwaukee River and the Paramount Record Label was created. A studio was set up in the complex so the original wax recordings, which were very sensitive to temperature, would be close to the pressing plant. The NYRL also pressed records for other record labels such as the Black Swan Label, which featured African American artists. Paramount Records retained the rights to the artists under the Black Swan Label when it went bankrupt. Subsequently, some of the most famous blues artists in American history recorded at the Paramount Records studio in the Village of Grafton, often times arriving on the Interurban Railway and staying at the aforementioned Bieline Hotel.

The Paramount Records legacy has resurfaced in the ongoing downtown Grafton revitalization project, which was undertaken by the Village in 1998. Downtown amenities developed as part of the project that pay homage to Paramount Records include a Walk of Fame made of granite that resembles a piano keyboard and the Paramount Pedestrian Plaza, which has a fountain shaped like a saxophone. The annual Paramount Blues Festival has also recently been organized by the Grafton Blues Association. The Festival is held in Lime Kiln Park and features numerous blues artists and workshops.

Lime Kiln Park

Lime Kiln Park, located in the Village of Grafton along the Milwaukee River, is the site of three lime kilns that were constructed in conjunction with a former limestone quarry owned by the Milwaukee Falls Lime Company, which was incorporated in 1890. The kilns ceased operation in the 1920's, but they represent an important part of the heritage of the Grafton area. Lime quarries sparked much of the area's early development due to the high concentrations of dolomite in the area. The first Grafton area lime kiln was built in 1846.

Original County Courthouse

In 1853 Ozaukee County split from Washington County because of a disagreement about where to locate the County seat. The Ozaukee County seat was located in Grafton for a brief period after Ozaukee County split from Washington County. The original courthouse and jail were housed in a two-story stone structure built in 1845. Shortly thereafter the County seat was moved to Port Washington. In the 1920's the building served as the Bielein Hotel and housed many of the artists recording at the Paramount Records studio, also located in Grafton. The building currently houses the Paramount Restaurant, which features Paramount Records memorabilia.

Interurban Railway

The Milwaukee Northern Railway was incorporated in 1905 to construct an electric railway from Milwaukee to Sheboygan. The section of the railway between Milwaukee and Port Washington began operation on November 2, 1907. The section between Port Washington and Sheboygan was completed in September 1908 and service along the full line began on September 22, 1908. Stops in Ozaukee County included Mequon, Thiensville,

Cedarburg, Grafton, Port Washington, and Belgium. In 1922 the right of way was acquired by The Milwaukee Electric Railway and Light Company. Operation of the line continued until 1951. During its operation, the Interurban Railway was noted for transporting African-American blues musicians to the Paramount Recording Studio in the Village of Grafton. Today the Ozaukee Interurban Trail follows the route of the former Interurban Railway (see Map IV-11 in Chapter IV of the Ozaukee County Comprehensive Plan for the trail location).

Downtown Cedarburg

Downtown Cedarburg serves as an example of the successful use of historic preservation as a tool for economic development. As outlined in the 2010 City of Cedarburg Development Plan, extensive historic preservation surveys have been compiled to identify the many structures and sites in downtown Cedarburg with historic significance resulting in the formation of a City Landmarks Commission, development of historic preservation ordinances, and the nomination of two historic districts (the Washington Avenue Historic District and Columbia Historic District) to the National Register of Historic Places. Tourists are attracted to the Downtown Area and it remains a thriving shopping and entertainment district as a result.

Mequon-Thiensville Town Center Design Guidelines – Design Guidelines for the Historic Village

The City of Mequon and Village of Thiensville have cooperatively developed a set of design guidelines for the Town Center Area, which is shared by both the City and the Village. One of the components of the Town Center Area is called the Historic Village. The Historic Village is located in the Village of Thiensville along Green Bay Road and Main Street and includes the Green Bay Historic District and Main Street Historic District, which are listed on the National Register. Several sites within the Historic Village have also been designated as local landmarks by the Thiensville Historic Preservation Commission. The Historic Village Design Guidelines recognize that the district's historic character is one of the most recognizable assets and community strengths within the Town Center Area. These guidelines were developed to ensure the character is preserved and to promote compatible infill development. The guidelines are enforced by the Village Plan Commission and Historic Preservation Commission.

Flag Day

The origins of Flag Day started in the Stony Hill School in Wabeukea. In 1885 a nineteen year old teacher named Bernard John Cigrand assigned his students to write an essay about what the American Flag meant to them. From that point on Mr. Cigrand dedicated himself to educating Americans about the meaning of the American Flag. An observance of Flag Day is now held annually in Wabeuka on the second day in June at the Americanism Center. The Center is also home to the Avenue of Flags, which includes all 27 American Flag star configurations, the National Flag Day Museum, and the Americanism Center Commemorative Courtyard. Numerous organizations such as the Boy Scouts, the American Legion, and 4-H Groups use the Center's facilities at no charge. All of the Center's expenses are paid through fundraisers and donations.

Luxembourg American Cultural Center

The development of the Luxembourg American Cultural Center (LACC) is a collaborative effort of the Luxemburg American Cultural Society, Americans of Luxemburgish descent, and the government of the Grand Duchy of Luxembourg. Phase I of the construction will include the Roots and Leaves Museum, which is scheduled to be finished in August 2007 in conjunction with the Luxembourg Fest in Belgium. One half of the museum will feature exhibits about Luxembourg. The displays were manufactured in Luxembourg and shipped to the U.S. as a gift from the Government of Luxembourg. The other half of the museum will feature exhibits about Luxembourg heritage from around the Country and immigration to America, especially between 1845 and World War I. The Mamer/Hansen Stone Barn, built in 1872 by immigrant Jacob Mamer and a prime example of Luxemburgish architecture, will also be moved to the site. Phase II of the LACC will include a research center, community center, and conference center.

Octagon Barn

An octagon shaped barn was built in the Town of Grafton approximately 100 years ago by Ernest Clausing. It is believed that Clausing built 14 octagon barns in southern Ozaukee County, all less than one mile from Lake Michigan. One was dismantled and moved to Old World Wisconsin in Eagle. The origins of this unique design are Dutch and German. The eight walls made these structures capable of withstanding strong winds from nearby Lake Michigan. Each of the eight walls in the Town of Grafton barn is 26 feet wide and 20 feet high. The barn has 3,200 square feet of floor space.

Leland Stanford's Law Office

The site of the former Leland Stanford law office, used by Stanford between 1848 and 1952, is located in the City of Port Washington adjacent to the parking lot of the Port Hotel. Stanford moved to Port Washington in 1848 from New York State to practice law. In 1852 he moved to California and opened a successful grocery business. In 1861 Stanford was elected as the governor of California. Stanford had additional success in business, including becoming the President of the Central Pacific Railroad. Stanford also endowed Stanford University, which was named after his son. The building in Port Washington was razed in 1975.

Port Ulao

James T. Gifford came to the Port Ulao area in 1847 to build a port on Lake Michigan at the site of a former Indian village. Land surveyors Luther Guiteau and J. Wilson Guiteau were hired to plat about fifty acres into streets and lost and a 1,000 foot long pier was built into Lake Michigan for loading wood onto ships, which was used as fuel. The first Macadam road in the County (a mixture of charcoal and clay) was built into the site and the Port became a major hub for shipping in Ozaukee County by the mid-1800s. Eventually a fishing pier was added where fishing boats could dock to clean and smoke fish. Port Ulao later declined as steamships stopped using wood for fuel. Charles Guiteau, the son of Luther Guiteau and Port Ulao resident, was hanged in 1880 for the assassination of President Garfield.

Archaeological Resources

Preservation of archaeological resources is also important in preserving the cultural heritage of the City of Port Washington and the Ozaukee County planning area. Like historical sites and districts, significant prehistoric and historic archaeological sites provide the County and each of its communities with a sense of community heritage and identity and can provide for economic opportunities through tourism if properly identified and preserved. Archaeological sites found in the Ozaukee County planning area can fall under two categories, prehistoric sites and historic sites. Prehistoric sites are defined as those sites which date from before written history. Historic sites are sites established after history began to be recorded in written form (the State Historical Society defines this date as A.D. 1650).

As of 2005, there were 393 known prehistoric and historic archaeological sites in the Ozaukee County planning area listed in the State Historical Society's Archaeological Sites Inventory, including prehistoric and historic camp sites, villages, and farmsteads; marked and unmarked burial sites; and Native American mounds. No archaeological sites in Ozaukee County are listed on the National or State Registers of Historic Places.

The State Historical Society also identifies and catalogs burial sites, including sufficient contiguous land necessary to protect the burial site form disturbance, throughout Wisconsin. There are six such catalogued burial sites located in Ozaukee County: Immanuel Lutheran Heritage Cemetery, Lakefield Cemetery, Union Cemetery, Katherina Cemetery, St. Finbars Cemetery, Sizer Cemetery, and Woodworth Pioneer Cemetery. The location of these sites is shown on Map III-36. About 40 additional cemeteries are inventoried in Chapter IV. In addition, a circular Native American mound and a group of oblong embankments are located in Section 22 in the Town of Saukville.¹³

¹³ This Indian mound group is referenced in *Antiquities of Wisconsin as Surveyed and Described*, Smithsonian Institute, Washington D.C., 1855.

The field notes and plat maps of the U.S. Public Land Survey of Wisconsin, completed between 1834 and 1836 for Ozaukee County, are also valuable sources for identifying the location of significant Native American sites and trails. Survey records show there were additional Native American mounds and several Native American sugar camps, villages, and trails located in the County. These features are shown on Map III-37.

[Note: An archaeological site distribution study of Ozaukee County is available through the UW-Milwaukee Archaeology Department.]

Local Historical Societies and Museums

There are several local historical societies affiliated with the State Historical Society of Wisconsin in the Ozaukee County planning area. These include the Ozaukee County Historical Society, Cedarburg Cultural Center, Mequon Historical Society, Port Washington Historical Society, and Saukville Area Historical Society. Each historical society contains a varying number of facilities housing items of historical or archaeological significance, historical records and information, educational facilities, or gallery and performance facilities, which are summarized on Table III-25. The Port Washington Historical Society provides a reading room in the City of Port Washington. The resources of the Ozaukee County Historical Society, itself affiliated with the State Historical Society of Wisconsin, are also available to City residents.

As shown in Table III-25, most of the historical societies in the Ozaukee County planning area maintain facilities which contain items of historical or archaeological significance and historical records. The Cedarburg Cultural Center includes galleries which feature exhibits and performances and two off-site museums. The Mequon Historical Society maintains a historic site listed on the Nation and State Registers of Historic Places and a reading room. The Ozaukee County Historical Society maintains several sites including a collection of pioneer buildings located in Hawthorne Hills County Park¹⁴, a one-room school house, and archives of historical records pertaining to Ozaukee County. As of 2005, the Ozaukee County Historical Society was also working to restore the Interurban Depot in the City of Cedarburg for use as a museum and an archives research center. The Port Washington Historical Society operates a museum in the Light Station at 311 E. Johnson Street as well as a Research Center in the City of Port Washington. Other museums located in the Ozaukee County planning area include the National Flag Day Foundation Americanism Center located in the Town of Fredonia and the Wisconsin Museum of Quilts and Textiles located in the City of Cedarburg.

Cultural Venues, Events, and Organizations

Cultural performances, events, and organizations that showcase the arts and the heritage of Ozaukee County greatly contribute to the quality of life and economy of the County. There are several venues at which cultural performances are regularly held. Many of these venues are not historic themselves, but serve as a cultural resource because they facilitate culturally significant performances and exhibits. They are listed in Table III-26. Cultural venues in the County include multi-faceted facilities such as the Cedarburg Cultural Center, which is a blend of performing arts center, art gallery, educational facility, museum, and community gathering place, the historic Rivoli Theatre, which continues to show movies in downtown Cedarburg due to the efforts of the Cedarburg Landmark Preservation Society, Inc., American Legion Posts, and attractions such as museums and restored historic buildings.

Table III-27 lists the cultural events that took place in Ozaukee County during 2006 and 2007. A wide range of events took place including: antique shows, seasonal festivals (such as Fish Day in the City of Port Washington), parades, music series, flea markets, open houses, fairs, art crawls, and craft shows. Like the cultural venues, these events provide a medium to showcase the arts and heritage of the County. They also contribute to the

¹⁴ There are 20 buildings dating from 1840 to 1900 including farm houses, schools, tradesmen's shops, and the railway station formerly located in Cedarburg at the Pioneer Village.

quality of life and economy of the County and provide entertainment for residents and visitors. Cultural venues and events are often supported by cultural organizations located in the County, which are listed on Table III-28. Many of these organizations provide volunteer staffing, fundraising, and promotion for the venues and events. Examples include the Luxemburg American Cultural Society, Grafton Blues Association, Cedarburg Festivals Inc, and clubs such as the Lions Clubs, Kiwanis Clubs, and Jaycees Clubs. Other organizations provide educational and recreational opportunities for the County's youth, such as the Boy Scout and Girl Scout troops and 4-H Clubs, or support the arts, such as the Cedar Creek Repertory Company and Port Summer Theater.

SUMMARY

This chapter provides inventory information on existing agricultural, natural, and cultural resources in the City of Port Washington. Information regarding soil types, agricultural productivity, topography and geology, nonmetallic mining resources, water resources, forest resources, natural areas and critical species habitat sites, environmental corridors, park and open space sites, historical resources, and archeological resources is included in this chapter. The planning recommendations set forth in the Agricultural, Natural, and Cultural Resources Element chapter are directly related to the inventory information presented in this chapter. Inventory findings include:

- There are two types of soils found in the City of Port Washington: the Kewaunee-Manawa association and the Houghton-Adrian association.
- Approximately 25.8 percent of the City of Port Washington planning area is covered by hydric soils (about 2,531 acres), generally associated with stream beds and wetland areas. Although hydric soils are generally unsuitable for development, they may serve as important locations for the restoration of wetlands, as wildlife habitat, and for stormwater detention.
- The U.S. Natural Resources Conservation Service (NRCS) has created a land evaluation and site analysis (LESA) system to help identify areas to be preserved for farmland. LESA is a numeric system for rating potential farmland preservation areas by evaluating soil quality (LE or land evaluation) and geographic variables (SA or site assessment). To develop the LE rating the NRCS rated each soil type in Ozaukee and Washington Counties and placed the rated soils into groups ranging from the best suited to the worst suited for cropland use. The best group is assigned a value of 100 and all other groups are assigned lower values. In addition to soil type, the land evaluation component considers slope, the agricultural capability class, and soil productivity.
- Surface elevations in the Ozaukee County planning area range from a low of 580 feet above sea level in the Town of Belgium along Lake Michigan to a high of 988 feet in the southwestern portion of the Town of Cedarburg.
- In 2000, there were 78 acres of surface water and 950 acres of wetlands in the City of Port Washington planning area.
- In 2007, there were 687 acres of floodplains in the City of Port Washington planning area.
- The City of Port Washington lies primarily within the Sauk Creek watershed, but a small western part and a small southern part of the City lie within the Milwaukee River watershed.
- There are no dams located within the City of Port Washington planning area.

- There are three major inland lakes located entirely or partially within the Ozaukee County planning area. There are no major lakes located within the City of Port Washington planning area. Sauk Creek is the major stream located within the City of Port Washington planning area.
- Woodlands are defined as upland areas of one acre or more in area, having 17 or more trees per acre, each deciduous tree measuring at least four inches in diameter 4.5 feet above the ground, and having canopy coverage of 50 percent or greater. Coniferous tree plantations and reforestation projects are also classified as woodlands. Woodlands encompassed 343 acres, or about 3.5 percent of the City of Port Washington planning area, in 2000.
- The Managed Forest Law (MFL) is an incentive program intended to encourage sustainable forestry on private woodlands in Wisconsin with a primary focus on timber production.
- Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. A total of two natural areas, encompassing about of 356 acres, have been identified in the City of Port Washington planning area. The first natural area is Cedar Heights Gorge, a NA-3 site encompassing a total of 9 acres. The second natural area is the Ulao Lowland Forest, a NA-3 site encompassing a total of 347 acres.
- Critical species habitat sites consist of areas outside natural areas which are important for their ability to support rare, threatened, or endangered plant or animal species. One site supporting rare or threatened plant and animal species has been identified in the City of Port Washington planning area. This site is the Sauk Creek Nature Preserve which encompasses an area of 13 acres. The species of concern located in the critical species habitat site is the forked aster. There are no aquatic sites supporting threatened or rare fish, herptile, or mussel species in the City planning area.
- The Wisconsin Wildlife Action plan was developed by the Department of Natural Resources (DNR) to focus efforts on conserving wildlife species that have been identified as Species of Greatest Conservation Need.
- Important Bird Areas (IBA) are sites that provide essential habitat to one or more species of breeding or non-breeding birds. There are two approved IBAs, the Ozaukee Bight Diving Duck Preserve and the Harrington Beach Diving Duck Preserve, located in Ozaukee County as of 2007. The Cedarburg Bog was also nominated for IBS status in 2007.
- Land use changes in Ozaukee County have resulted in a variety of artificial barriers that preclude aquatic life passage and isolate existing habitats. Over 200 potential impediments were identified in Ozaukee County streams in 2006.
- Pre-European settlement upland vegetation in Ozaukee County consisted of a mixture of American beech, sugar maple, basswood, black and white oak, and white ash. Lowland vegetation consisted of a mixture of black ash, American elm, and tamarack.
- Invasive plant species widely found in Ozaukee County include purple loosestrife and reed canary grass.
- Environmental corridors and isolated natural resource areas include the best remaining woodlands, wetlands, plant and wildlife habitat areas, and other natural resources and have truly immeasurable environmental and recreational value. Environmental corridors and isolated natural resource areas are identified by SEWRPC and classified depending on their size. Primary environmental corridors are at least 400 acres in area, two miles in length, and 200 feet in width. Secondary environmental corridors are between 100 and 400 acres in

size and at least one mile in length except where secondary corridors serve to link primary environmental corridors, in which case no minimum area or length criteria apply. Isolated natural resource areas are between five and 100 acres in size and at least 200 feet in width.

- In 2000, 1,022 acres in the City of Port Washington planning area were located within primary environmental corridors. Secondary environmental corridors totaled 90 acres in the City planning area. Isolated natural resource areas within the City planning area totaled 268 acres.
- There were no County parks located in the City of Port Washington in 2005.
- There were no Wisconsin DNR sites located within the City of Port Washington in 2005.
- There were 33 park and open space sites owned by the local government and public schools in the City of Port Washington in 2005. Those sites encompassed 280 acres, or about 2.9 percent of the City. The City of Port Washington owned 27 of the park and open space sites which encompassed 252 acres. The Port Washington-Saukville School District owned 4 of the park and open sites, which encompassed 19 acres.
- In 2005, there were 2 privately owned park and open space sites located in the City of Port Washington planning area encompassing 9 acres. One additional site was owned by a private organization for resource preservation purposes. The Sauk Creek Nature Preserve, which encompasses 31 acres, was owned by the Ozaukee Washington Land Trust.
- There were 32 historic places and districts in the planning area listed on the National Register of Historic Places and the State Register of Historical Places in 2005. Of the 32 historic places and districts listed on the National and State Registers, 27 are historic buildings or structures, five are historic districts, and one is a shipwreck. In addition to those historic sites and districts nominated to the National and State registers of historic places, there are 199 sites in the Ozaukee County planning area which have been designated as local landmarks by local governments. In 2005, there were 7 historic places and districts in the City of Port Washington planning area listed on the National Register of Historic Places and the State Register of Historical Places. These historic places and districts include the Edward Dodge House, the Old Ozaukee County Courthouse, St. Mary's Roman Catholic Church, the Harry W. Bolens House, the Hoffman House Hotel, the Port Washington Light Station, and the Port Washington Downtown Historic District.
- As of 2005, there were 393 known prehistoric and historic archaeological sites in the Ozaukee County planning area listed in the State Historical Society's Archaeological Sites Inventory, including prehistoric and historic camp sites, villages, and farmsteads; marked and unmarked burial sites; and Native American mounds. No archaeological sites in Ozaukee County are listed on the National or State Registers of Historic Places.
- The Port Washington Historical Society provides a reading room in the City of Port Washington. The resources of the Ozaukee County Historical Society, itself affiliated with the State Historical Society of Wisconsin, are also available to City residents.

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