ELEMENT 5: AGRICULTURAL, NATURAL AND CULTURAL RESOURCES

> *Agricultural, natural and cultural resources element*. A compilation of objectives, policies, goals, maps and programs for the conservation, and promotion of the effective management, of natural resources such as groundwater, forests, productive agricultural areas, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and nonmetallic mineral resources consistent with zoning limitations under s. 295.20 (2), parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources.

In order to address the required issues of the State of Wisconsin's comprehensive planning law, the following will be addressed:

5.1 VISIONING

From the March 25th, 2009 County Plan Meeting:

Visioning Questions:

Twenty years from now, what will or what do we want the Agricultural, Natural, and Cultural Resources of Polk County to look like?

- Whatever exists 20 years from now, however we utilize our natural resources, we planned it, it didn't just happen to us.
- All water resources are at least at the same level of quality as today – WATER IS BIG DEAL, WATER IS IMPACTED BY ALL DEVELOPMENT (agreement that this is the most important natural resource)

- 20 years from now the current County parks, forests, are maintained as they exist today.
- Within twenty years we could encourage people to come here because we are prepared
- Balance between preservation & use of agricultural & natural resources
- All natural resources are protected from unplanned development
- Protect natural resources from inappropriate development
- Preserve/establish open space & undeveloped spaces
- Utilizing agricultural land for self sufficiency
- Agricultural lands available for fuel-crop growth
- Maintain current parks (federal, State, County) & County lands & boat landings
- Removal of legislative barriers to accomplishing goals
- Open, undeveloped, and green spaces exist
- Preserve agricultural land, large parcels of land have been retained
- Polk County community more self-sufficient, citizens less dependent on external resources, meet basic needs from local sources: energy, food
- Small-town and rural atmosphere maintained
- Historic resources maintained
- Wise Use of resources
- Polk County's/Our most precious resources are still intact/preserved/conserved
- Preserve agricultural, natural, and cultural resources in at least today's quality and quantity
- Prime agricultural lands are kept from development

5.2 EXISTING CONDITIONS

Polk County's history and development is rooted in its natural resources. Prior to settlement by those of European heritage, Polk County was covered in a variety of different ecosystems, but primarily pine forest. The early settlers included traders and farmers, both of which made a living from the land. Soon after the timber industry started prospering, farming began in areas where the forests were cleared. The first agricultural community was formed in 1860. The chief exports were wood, lumber, wheat, furs, and mineral water. By 1880, there were 1,414 farms. At the turn of the century, dairying started becoming more and more prominent.

During the 20th Century, agriculture, as a percentage of the economy, declined as more manufacturing, retail, and professional employment opportunities arose. Even though agriculture decreased, a significant percentage of the County's land base remains in agricultural production. Concurrently, there has been significant growth pressure from the Twin Cities in the southwestern portion of the County.

As outward from the Twin Cities migration progresses, this growth is beginning to impact additional areas to the north and east.

During the first decade of the 21st Century, the agriculture and natural resource industries of Polk County have experienced a lift from the increased interest and investment in local and organic food and renewable energy. The increase in demand for local and/or organic food has grown significantly since the turn of the century. This has helped existing family farms and has provided a catalyst for new farms to start in Polk County. In addition, the abundance of farmland and natural areas are providing Polk County an opportunity to take advantage of the emerging renewable energy and bio-energy industries. A wide range of industries, public entities, farms, and individuals in Polk County are currently investigating how they could utilize farmland and natural areas as a source of renewable resources and bio-energy. The Village of Osceola is looking at how they can use lands within and around them to produce bio-energy. Many farmers in Polk County sell their crops to outfits that produce renewable energy, such as ethanol and bio-diesel.

Scattered throughout Polk County are many unique historical structures and sites that are important vestiges of its past. Throughout Polk County's existence, it is the characteristics of Polk County's natural and cultural resources that continue to define the local communities and provide the cornerstone for the quality of life for local residents. Clean and abundant water is needed for drinking, industry, wildlife, and agriculture. Prime farmlands continue to provide the basis for the agricultural economy and for the preservation of the County's rural character. A diversity of other natural habitats are protected and managed for aesthetic value, recreational purposes, economic importance, and healthy ecosystems. Cultural and historic resources are identified and preserved for their social and economic value.

This section describes the existing conditions of the agricultural, natural, and cultural resources of Polk County. These resources provide the foundation for most, if not all, of the other comprehensive plan elements, and they may be discussed in numerous other places within the comprehensive plan. To plan for the future, a firm understanding of the resource base of the community is needed.

Considerable portions of this element are adapted from the U.S. Census Bureau, U.S. Department of Agriculture, Wisconsin Department of Revenue, Wisconsin Department of Natural Resources, Wisconsin State Historical Society, and *Soil Survey of Polk County, Wisconsin*, among other sources.

5.3 AGRICULTURAL RESOURCES

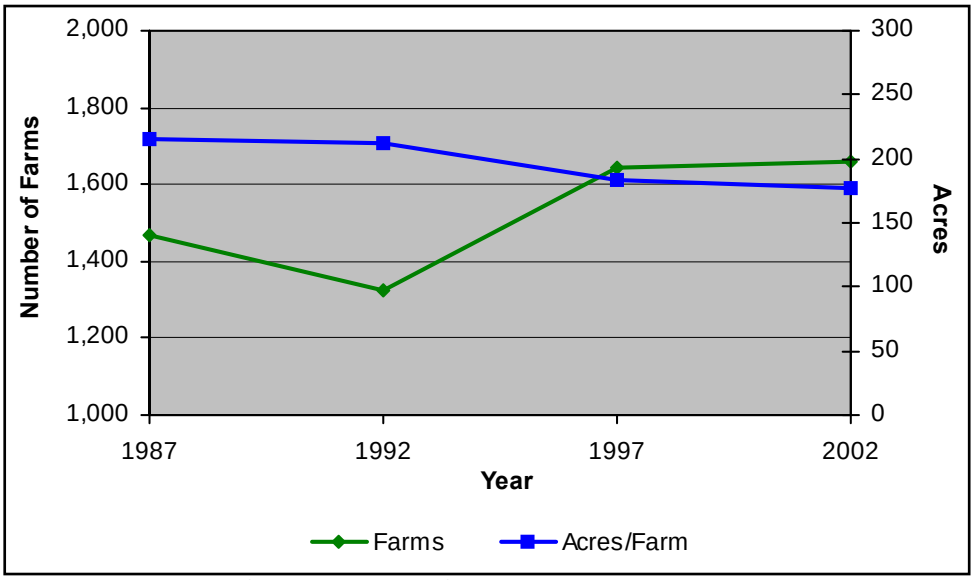
Local Agricultural Industry Trends

Agriculture is an important element of the social and economic characteristics of Polk County. Changes in agriculture due to socio-economic conditions and the development pressures to convert agricultural land to other uses can have profound impacts in Polk County and surrounding communities. Agricultural land is spread throughout Polk County.

In 2002, there were 192 more farms in Polk County than in 1987. Between 1992 and 2002, there was an increase of 335 farms in the county (See Figure 5.1). The average farm size decreased from 215 acres in 1987 to 177 acres in 2002. From 1987 to 2002, the number of farms increased by 13.1 percent and average farm size decreased 18 percent. Between 1992 and 2002, these numbers represent a 25 percent increase in total farms and a decrease of 17 percent for average farm size. This data shows that Polk County is experiencing a significant increase in small farms. It should be noted that the U.S. Census Bureau defines "farm" as any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold during the census year. Of the 1,659 farms in Polk County, 665 (40 percent) had sales under $1,000, and 1021 (61.5 percent) had sales of under $5,000.

This trend can be at least partially attributed to the out-migration of people living in the Twin Cities Metropolitan Area to rural areas, as Polk County is located adjacent to the Twin Cities Metropolitan Statistical Area and the southwest portion of the County is in the commuter shed for workers employed in the Twin Cities. The trend of an increasing number of farms and decreasing average farm size is the direct opposite of most areas in Wisconsin and the U.S.A. This trend can be deceiving in the sense that many of these newer farms are not producing crops and much of their land is not in cultivation. The majority of these newer farms can be classified as hobby farms or large lot residential uses with limited tillage or livestock.

Figure 5.1 - Number and Average Size of Farms - 1987 to 2002 – Polk County



Source: U.S. Department of Agriculture, Census of Agriculture

According to US Dept of Agriculture (USDA), farmland declined by 22,556 acres (35 square miles) or seven percent, between 1987 and 2002 (See Table 5.1). Farm acres accounted for 51.6 percent of the total land area in the county in 1987 and 47.9 percent in 2002. As shown in Table 5.2, in 2002, over 90 percent of the farms in Polk County were non-corporation individual or family farms.

Table 5.1 - Acres in Farmland – 1987 to 2002 – Polk County

	1987	1992	1997	2002
Acres	315,416	282,639	301,736	292,860
Percent of County Land Area	51.6%	46.2%	49.3%	47.9%

Source: U.S. Department of Agriculture, National Agricultural Statistics Service

Table 5.2 - Number of Farms by Ownership – 1987 to 2002 – Polk County

Ownership	1987	1992	1997	2002
Individual/Family Farms	1,343	1,210	1,466	1,542
Partnership	102	86	114	72
Corporation – Family	19	22	52	36
Corporation – Other	1	3	2	2
Other (Coop, Trust, etc...)	2	3	8	7

Source: U.S. Department of Agriculture, National Agricultural Statistics Service

The towns of Alden (16,398), Farmington (15,133), Eureka (14,641), and Clear Lake (12,545) have the greatest number of assessed agricultural acres (See Table 5.3). In comparison, the towns of Bone Lake, Clam Falls, Johnstown, Luck, McKinley, and Sterling all have less than 6,000 assessed acres in agricultural use. The assessed agricultural acreage has declined by 117,815 acres from 1990 to 2007 in Polk County. The largest loss, which was 14,175 acres, occurred in Eureka. Other substantial losses occurred in the towns of Lincoln (-10,759), Clear Lake (-7,742), Clayton (-6,588), and Balsam Lake (-6,328). The cities and

villages that experienced large agricultural land losses were Clayton (-668), Osceola (-493), and St. Croix Falls (-428).

Table 5.3 Assessed Agricultural Parcels and Acreage by Municipality – 1990 and 2007 – Polk County

	Total Parcels			Total Acres			
	1990	2007	# Change	1990	2007	# Change	% Change
TOWNS							
Alden*	854	742	-112	21,291	16,398	-4,893	-23.0
Apple River*	397	316	-81	9,791	6,762	-3,029	-30.9
Balsam Lake	418	287	-131	13,321	6,993	-6,328	-47.5
Beaver	421	359	-62	13,079	7,351	-5,728	-43.8
Black Brook	553	500	-53	15,415	11,516	-3,899	-25.3
Bone Lake	393	270	-123	7,423	4,893	-2,530	-34.1
Clam Falls	345	270	-75	7,154	5,035	-2,119	-29.6
Clayton	524	445	-79	16,251	9,663	-6,588	-40.5
Clear Lake	627	510	-117	20,287	12,545	-7,742	-38.2
Eureka	868	630	-238	28,816	14,641	-14,175	-49.2
Farmington*	715	621	-94	19,581	15,133	-4,448	-22.7
Garfield	483	473	-10	13,865	11,544	-2,321	-16.7
Georgetown	316	303	-13	10,383	7,058	-3,325	-32.0
Johnstown	219	177	-42	6,645	4,292	-2,353	-35.4
Laketown	533	456	-77	15,024	10,575	-4,449	-29.6
Lincoln	635	419	-216	20,418	9,659	-10,759	-52.7
Lorain	328	284	-44	9,295	7,414	-1,881	-20.2
Luck	390	225	-165	9,566	4,105	-5,461	-57.1
McKinley*	333	204	-129	10,872	5,808	-5,064	-46.6
Milltown	421	382	-39	11,484	7,802	-3,682	-32.1
Osceola	459	345	-114	12,343	7,116	-5,227	-42.3
Saint Croix Falls	473	333	-140	12,187	7,791	-4,396	-36.1
Sterling	297	231	-66	7,262	5,015	-2,247	-30.9
West Sweden	429	361	-68	10,421	8,593	-1,828	-17.5
TOTALS	**11,431**	**9,143**	**-2,288**	**322,174**	**207,702**	**-114,472**	**-35.5**
VILLAGES							
Balsam Lake	10	6	-4	282	111	-171	-60.6
Centuria	33	29	-4	669	503	-166	-24.8
Clayton	63	57	-6	1,608	940	-668	-41.5
Clear Lake	45	30	-15	991	650	-341	-34.4
Dresser	15	4	-11	335	95	-240	-71.6
Frederic	0	0	0	0	0	0	0.0
Luck	20	5	-15	433	93	-340	-78.5
Milltown	32	22	-10	745	360	-385	-51.7
Osceola	31	10	-21	690	197	-493	-71.4
Turtle Lake	0	6	6	0	72	72	0.0
TOTAL	**249**	**169**	**-80**	**5,753**	**3,021**	**-2,732**	**-47.5**
CITIES							
Amery	14	5	-9	250	67	-183	-73.2
St. Croix Falls	23	9	-14	512	84	-428	-83.6
TOTAL	**37**	**14**	**-23**	**762**	**151**	**-611**	**-80.2**
COUNTY TOTAL	**11,717**	**9,326**	**-2391**	**328,689**	**210,874**	**-117,815**	**-35.8**

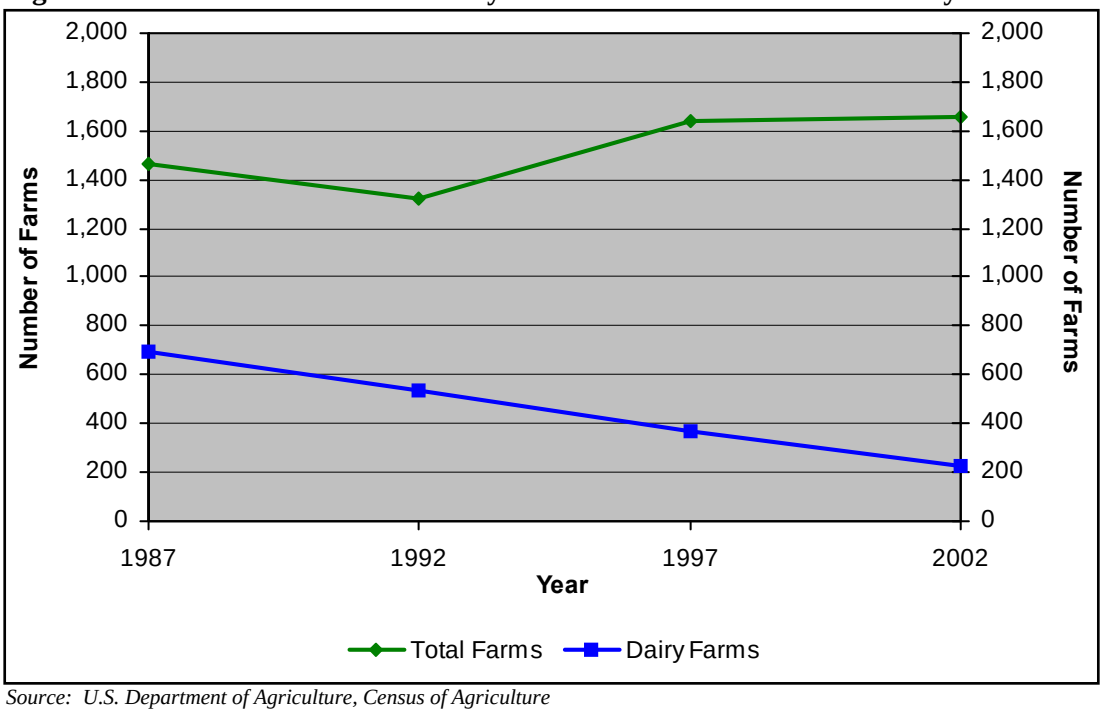
Source: Wisconsin Department of Revenue
** Data were not available for 1990. 1989 data were used.*

Of the towns, Luck (-57 percent), Lincoln (-53 percent), Eureka (-49 percent), Balsam Lake (-48 percent), and McKinley (-47) had the largest percentage reductions in agricultural land. Of the cities and villages, the largest percentage losses of assessed agricultural lands occurred in the City of St. Croix Falls (-83.6 percent) and Village of Luck (-78.5 percent). At the same time, the majority of the incorporated communities had percentage losses of over 30 percent.

The number of dairy farms in Polk County has continued to decrease over the past two decades, with 183 dairy farms as of April 2008, according to the Wisconsin Agricultural Statistics Service. In 1987, Polk County was home to 696 dairy farms (47 percent of the total farms), which was 468 more dairy farms than existed in 2002. This is a 67 percent decrease in the number of dairy farms in Polk County between 1987 and 2002. With the County's increase in smaller non-traditional farms, the 14 percent of total farms can also be defined as misleading, since many farms are not traditional crop producing operations. However, the 67 percent reduction of dairy farms over a 15 year time span is extremely significant.

Hay and silage production was the most common crop in 2002, with 917 farms producing hay on more than 59,000 acres. Corn production for grain and silage and soybeans represents the next most common use of these agricultural lands, with 750 farms using approximately 58, acres for seed and grain production, and an additional 195 farms cultivating 21,000 acres for soybeans. The County ranked number five in the state for number of turkeys and 140th nationally. It also ranks 10th in the state for aquaculture.

Figure 5.2 - Number of Farm and Dairy Farms - 1987 to 2002 – Polk County



Source: U.S. Department of Agriculture, Census of Agriculture

Over the past few years, Polk County has seen an increase in the number of farms that are supplying the growing number of consumers that want to purchase local food and/or organic food. Specifically for certified organic operations, in 2002, there are currently dozens of farms in Polk County that support the local and/or organic markets. These direct market farms are marketing themselves locally and regionally. Due to the County's close proximity to the Twin Cities and Eau Claire, there are extensive markets for these farms. In addition, Polk County currently has weekly farmers markets in Amery, Balsam Lake, Clayton, Eureka, Frederic, Milltown, Osceola, St. Croix Falls, and Turtle Lake during the summer and fall months. Currently in Polk County, there are over a dozen Community Supported Agricultural operations. There are several publications that offer information on local food and agriculture in Polk County, such as the Western Wisconsin Farm Fresh Atlas and the Eats and Arts – Polk County.

Direct market farms have a variety of impacts on the environment and economy. Environmentally, organic farms pollute the land, ground water, or surface water significantly less than farms that rely on chemical pesticides and fertilizers. Direct market farms reduce the amount of energy used for the transporting agricultural goods. Economically, the money spent purchasing food from local farms initially stays in the local/regional economy, as opposed to being sent to different regions of the county and/or outside the U.S. The money spent on direct market food is often circulated in the local economy several times, which is important in creating a sustainable local economy. Lastly, locally-grown food is often significantly better quality (e.g. freshness, taste) than food that has been transported from outside the region.

At the same time that it is experiencing an increase in the number of direct market farms, Polk County has also seen an increase in interest and investment in renewable energy, primarily from the wood sector. Firewood has long been an important home heating fuel in the County, but now several farms, companies, and individuals are working on creating palletized fuel from local sources. In addition, a variety of liquid fuel production operations (on-site bio-diesel and straight vegetable oil) can be found throughout the County. Different units of government in Polk County are utilizing or investigating renewable energy for a variety of purposes. Lastly, Polk County has seen an increase in companies that are manufacturing goods to support this investment and entrepreneurship. Together, the local and organic agricultural market and renewable energy market are playing – and will likely continue to play -- a significant role in the County's economy.

Prime Agricultural Lands

Prime agricultural land is the land that is best suited for food, feed, forage, fiber, and oil seed crops. It may be cultivated land, pasture, woodland, or other land, but it is not existing urban and developed land or water areas. The soil qualities, growing season, and moisture supply must be capable of producing a sustained high yield of crops in an economic manner. Prime agricultural land is able to produce the highest yields with minimal inputs of energy and economic resources.

The Natural Resources Conservation Service (NRCS), formerly known as the Soil Conservation Service (SCS), has established a system of soils classification to uniformly evaluate the potential suitability of soils for agriculture production. The Capability Classification of Soils is published as part of the *Soil Survey of Polk County, Wisconsin*.

The capability classification groups by type to show which are most suitable for farming. The capability classification system is intended to help decision-makers evaluate areas for their desirability for continued agricultural productivity. It does this by considering characteristics and suitability for supporting various crops and activities, and is based on the limitations of the soils, risk of damage as they are used, and the way they respond to treatment. Soils are classified in capability classes, subclasses, and units in accordance with their limitations, but without consideration of major and generally expensive land-forming that would change the slope, depth, or other characteristics of the soil, and without consideration of possible but unlikely major reclamation projects.

Class I, II, and III soils are considered prime farmland under the classification system and are each defined as:

- Class I **--** Class I soils have few limitations that restrict their use.
- Class II **--** Class II soils have some limitations that reduce the choice of plants or require moderate conservation practices.
- Class III **--** Class III soils have severe limitations that reduce the choice of plants or require special conservation practices, or both. They can be cultivated safely with special precautions.

Of the total land acres in Polk County, 322,628 acres (504 square miles) are classified as Class I, II, and III soils by the NRCS. These soils make up 53 percent of the total land acres of the county (See Table 5.4). Of the total area in Polk County, .28 percent are Class I, 27.81 percent are Class II soils, and 24.64 percent are Class III soils.

Table 5.4
Soil Capability Classification for Potentially Productive Agricultural Lands – Polk County

Soils	Acres	Percent of Total Land Acreage
Class I	1,719	.28
Class II	170,152	27.81
Class III	150,757	24.64
Total Classes I, II & III	**322,628**	**52.73**

Source: Polk County Soil Survey

Map 5-2 shows soils that are classified as Class I, II, and III. These are areas where the soils and other land characteristics are likely to be highly suited for agricultural activity. The value of these lands is associated with not only their soil class, but also with their size, present use, and any regulatory framework for their protection. Preserving these prime farmlands helps sustain the County's agricultural economy and rural character.

5.4 NATURAL RESOURCES

Groundwater

Groundwater has been identified as the most important natural resource in Polk County. Understanding how groundwater is used in the County and how it can become contaminated is important to understanding the relationship between land use and groundwater quality.

The first step in this process is to understand the source of groundwater. As rain and snow fall to the ground, some runs off into the lakes, rivers, and streams; some evaporates; and some is used by plants. The rest trickles down through the soil and subsoil material. This water eventually reaches a saturated zone that comprises groundwater. These saturated zones, called aquifers, are geologic formations that can store and transmit water. The concept of water moving from the land's surface into groundwater is the starting point for thinking about the relationship between land use and groundwater quality. Nearly anything that is dumped, spilled, or spread on the ground can seep down to groundwater. This groundwater is then used by residents for drinking, farming, and other activities. Groundwater can also return to the surface as springs or as discharge to lakes, river, and streams.

Protecting groundwater means modifying or even prohibiting certain activities in areas where contaminants can easily enter the groundwater. This can mean changing the type of septic system required, or limiting the concentration of development in areas that are most susceptible to contamination.

The Wisconsin Department of Natural Resources (DNR) has developed the Groundwater Contamination Susceptibility Model (GCSM) used to estimate the susceptibility of the groundwater based on particular natural resource characteristics. The natural resource characteristics include bedrock depth, bedrock type, soil characteristics, surficial deposits, and water table depth. The GCSM assigned a value to each of the resource characteristics. A weighting scheme was also developed to indicate the strength of each resource characteristic in estimating groundwater contamination susceptibility. The result of this analysis is a groundwater susceptibility map for the State of Wisconsin which shows that the majority of Polk County has contamination susceptibility numerical scores above the "moderately susceptible" level. Map 5-3 shows the depth to groundwater in Polk County.

Table 5.6 - Permitted Municipal and Industrial Discharges to Surface and Groundwater Polk County

Water Body	Owner	Type
Surface water and wetlands	Amani Sanitary District	Sanitary District
Apple River	City of Amery	Municipal WWTF
Groundwater	Village of Balsam Lake	Municipal WWTF
Groundwater	Village of Centuria	Municipal WWTF
Intermittent tributary to Beaver Brook	Village of Clayton	Municipal WWTF
Unnamed tributary to Willow River	Village of Clear Lake	Municipal WWTF
Groundwater	Cushing Sanitary District #1	Sanitary District
Groundwater and Brown Brook	Village of Fredric	Municipal WWTF
Groundwater	Lake Wapogasset Bear Trap Lake S.D.	Sanitary District
Unnamed Wetland and Groundwater	Village of Luck	Municipal WWTF
Groundwater	Village of Milltown	Municipal WWTF
St. Croix River	Village of Osceola	Municipal WWTF
St. Croix River	City of St. Croix Falls	Municipal WWTF
Clear Lake	Advanced Food Products, Inc	Industrial
Groundwater	F and A Dairy Products	Industrial
Little Moon Lake and Groundwater	Foremost Farms USA Clayton	Industrial
Tributary of St. Croix River	WI DNR Osceola Fish Hatchery	Industrial
St. Croix River	WI DNR St. Croix Falls Hatchery	Industrial

Source: Wisconsin Department of Natural Resources

Watersheds & Surface Waters

Lakes, ponds, rivers, streams, intermittent waterways, and natural drainageways make up the surface waters of Polk County. These resources are all water bodies, standing still or flowing, navigable and intermittent, and include natural drainageways that collect and channel overland rainwater or snowmelt runoff. Natural drainageways are characterized by intermittent streams, threads, rills, gullies, and drywashes that periodically contribute water to first-order streams. There are also many artificial drainageways where the natural drainageways have been altered by human activity. All of these features have the ability to transport sediment and pollutants and are affected by their watersheds.

Polk County has a total surface water area of 24,960 acres or 39 square miles (see Map 5-3). Balsam Lake (2,054 acres) is the largest surface water in Polk County. Other lakes of considerable size include Big Round Lake (1,015 acres), Bone Lake (1,781 acres), and Lake Wapogasset (1,186 acres). The St. Croix River travels along the western edge of Polk County.

A watershed is an area of land that drains or "sheds" its water to a lake, river, stream, or wetland. Some watersheds encompass several hundred square miles, while others may be small, covering only a few square miles that drain into a lake. This is important to understand since the effects of natural and human activities in one area can have a direct impact on other areas. The surface waters of Polk County fall within two major drainage systems - the St. Croix River Basin and the Lower Chippewa River Basin. Surface waters in the majority of the County fall within the St. Croix River Basin. An extremely small portion in the southeast corner of the County is in the Lower Chippewa River Basin.

Similar to surrounding counties, the source of nearly all potable water is groundwater. However, surface water can be a major source of groundwater recharge, and in the case of Polk County, a factor in maintaining the County's natural and recreational values. Consequently, there is also significant concern for understanding the impacts of development on the surface water resources in the County. The recent multi-year dry spell has left many small ponds dry and other larger surface water down in water levels over five feet in cases.

In general, the water quality in the St. Croix River and Lower Chippewa River Basin is a concern. The major concern is from added nutrients and sediment from run-off, primarily from agricultural land and in some areas urban development. The basins include the following watersheds: Wood River, North Fork Clam River, Clam River, Trade River, Wolf Creek, Balsam Branch, Upper Apple River, Beaver Brook, Hay River, South Fork Hay River, Trout Brook, Lower Apple River, and Upper Willow River watersheds. Surface and ground water quality can be affected by a wide variety of point and non-point sources,

including agricultural run-off, stormwater from parking lots and roads, soil erosion, and spills of hazardous materials. The risk of water contamination increases as development occurs. These findings are important for individual communities to consider as they develop local land-use and natural resources goals and strategies. Communities may select to participate in or support existing County or State programs to protect their water resources or implement local educational or regulatory programs. Map 5-4 shows the surface water resources in Polk County.

Impaired Waters

According to the Wisconsin Department of Natural Resources, some water bodies in Polk County are on the 2008 impaired waters list due to water quality concerns. These water bodies are:

- Ward Lake – mercury
- Cedar Lake – total phosphorous
- St. Croix River – PCBs

Other water bodies are at similar risk, since many of the native soils of the area have high levels of phosphorus. Polk County Land & Water Conservation Department is actively working to minimize soil erosion through best management practices to reduce such impacts. Mercury is a problem for virtually all lakes and rivers in Polk County. Since the vast majority of mercury contamination is spread via the atmosphere, it gives a fairly even dispersal of contamination to all waterbodies.

The plentiful surface waters are generally healthy. At the same time, many are suffering from the results of the soil erosion in the form of sedimentation. The native soils of the area contain a high level of phosphorous. This creates a situation of reduced habitat and high weed growth levels in the lakes and streams. There is an approach of planning high levels of soil conservation on the land to protect the waters of Polk County.

According to American Rivers, the Lower St. Croix River is tenth in its America's Most Endangered Rivers, 2009 Edition publication. The river received this ranking to due changes in land use along the river. Due to its prominence and importance to the County, the condition of the St. Croix River should be taken seriously.

Polk County has implemented its Shoreland Zoning Ordinance since 1967, which is stricter than required by the State of Wisconsin. The ordinance has gone through several updates and changes over the years to become the document it is today. With so many surface water resources in Polk County and so many

things being linked to quality; tourism, groundwater quality, and recreational opportunities, it makes sense that the county should take seriously protecting the quality of its waters.

Outstanding and Exceptional Resource Waters

Through its Wisconsin's Outstanding and Exceptional Resource Waters Program, the Wisconsin DNR is working to maintain the water quality in Wisconsin's cleanest waters. These waters have been classified into outstanding and exceptional waters. Outstanding resource water is defined as a lake or stream that has excellent water quality, high recreational and aesthetic value, high-quality fishing, and is free from point source or non-point source pollution. Exceptional resource water is defined as a stream that exhibits the same high-quality resource values as outstanding waters, but that may be impacted by point source pollution or have the potential for future discharge from a small sewer community. Polk County has six waters categorized as outstanding resources and 10 exceptional resource waters identified (See Table 5.5).

Table 5.5 - Outstanding and Exceptional Waters – Polk County

Outstanding Waters	Exceptional Waters
Clam River – West edge S8 T36N R15W downstream to Clam Falls Flowage	Behning Creek – All
McKenzie Creek – Downstream from 0.5 mi below McKenzie Lake	Big Rock Creek – All
Orr Creek – Lower 1.0 mile of stream in S13 T37N R15W	Burns Creek – All
Pipe Lake – All	Knapp Creek – Middle S17 T37N R16W to Knapp Flowage
Sand Creek and tributaries - All	Little McKenzie Creek - All
St. Croix River – All, except that the portion from the northern boundary of the St. Croix Falls city limits to a distance one mile below the STH 243 bridge at Osceola	Marquee Creek and Springs - All
	Peabody Creek – Lower 1.0 mile
	St. Croix River - From the northern boundary of the St. Croix Falls city limits to a distance one mile below the STH 243 bridge at Osceola
	Toby Creek and Springs - All
	Wolf Creek – CTH G downstream 1.2 mile

Source: Wisconsin Department of Natural Resources 2008

In Wisconsin, the upper St. Croix River from the St. Croix Flowage dam in Douglas County to the northern boundary of the St. Croix Falls city limits is classified as an Outstanding Resource Water (ORW) for the application of water quality standards under the state's anti-degradation rules. The entire Namekagon River from the outlet at Lake Namekagon to its confluence with the St. Croix is also classified as ORW. The St. Croix is classified as an Exceptional Resource Water (ERW) from the northern city limit of St. Croix Falls to one mile below the State Highway 243 bridge at Osceola. The outstanding classification resumes

from this point to the northern boundary of the Hudson City limits. From Hudson to the confluence with the Mississippi River, the St. Croix is classified as an ERW. The ORW classification provides a level of protection beyond the water quality standards that apply to all state waters as it recognizes the highest quality water in the state. The ERW water designation recognizes high quality waters where wastewater discharges may already exist. New or increased wastewater discharges to ORWs are not permitted unless the effluent meets background levels of the receiving water. For ERWs, increased discharges from existing point sources may be permitted. New discharges to exceptional resource waters may be permitted from communities that currently are unsewered if it is the best way to solve a public health or groundwater contamination problem[13].

Point Source Discharges

Private and public sewer systems and wastewater discharges are two potential sources of water pollutants. Since 2004, Polk County has seen a significant and consistent decrease in the number of issued permits for private sewer systems. In 2004, there were 398 new permits issued, and in 2007, there were 185 new permits issued. As of October, there have been 87 new permits issued. At the same time, every new system increases the number and density of private sewage systems in the County. This can lead to nitrates in the groundwater. There are 13 municipal and sanitary district wastewater treatment plants and five permitted industrial discharges that discharge to either surface or ground water in Polk County (See Table 5.6).

Shorelands

Shorelands provide valuable habitat for both aquatic and terrestrial animals and vegetation, and also act as buffers to protect water quality. Shorelands are also considered prime residential building areas because of their scenic beauty. Recognizing this conflict, and to maintain the environmental, recreational, and economical quality of our water resources, the State of Wisconsin requires counties to adopt and enforce a shoreland ordinance.

As required by the State, shorelands are defined as:

- all land within 1,000 feet of the ordinary high water mark of a lake, pond, or flowage; or
- all land within 300 feet of the ordinary high water mark of a river or stream or to the landward side of the floodplain, whichever is greater.

Each county must meet or exceed the minimum state standards for shoreland protection. The identified shoreland areas are based on the standards as defined in the Polk County Shoreland Zoning Ordinance.

[3] Taken from the 2002 Wisconsin Dept. of Natural Resources State of the St. Croix Basin 2002

Floodplains

One sensitive land feature that most residents are aware of is the floodplain, which is the flood-prone land adjacent to water bodies. Floodplains can be desirable development areas due to the proximity to lakes, rivers, and streams, but pose problems by possibly putting residents and property at risk. Development in floodplains can also affect the environmental quality of the waterway.

To better protect the residents of the state, and to minimize the loss of property, the State of Wisconsin, under Wisconsin Statute 87.30(1), requires counties, cities, and villages to adopt and enforce floodplain zoning. In addition, Wisconsin Administrative Code NR116, Floodplain Management Program, has been promulgated for the protection of property and public investments from the effects of flooding.

Development within the floodplain is usually assessed through the use of the Flood Insurance Rate Maps (FIRM) developed by the Federal Emergency Management Agency (FEMA). The floodplains as shown in Map 5-5 have been identified for Polk County based on the FEMA flood insurance maps. It is important to remember that this map is not a substitute for site-specific analysis. Natural and human changes in the landscape, and the age and accuracy of the flood insurance maps, has, in some cases, limited the reliability of these maps for identifying and designating floodplains.

Wetlands

There are a number of wetland areas within the watersheds that can affect water levels – and water quality -- of rivers and creeks flowing through Polk County. Wetlands are defined by the State Statute as “an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic (water-loving) vegetation and which has soils indicative of wet conditions.” Wetlands may be seasonal or permanent and are commonly referred to as swamps, marshes, or bogs. Wetland plants and soils have the capacity to store and filter pollutants, replenish groundwater supplies, store floodwaters, and maintain stream flows. Wetlands are the most biologically productive places on earth. These systems are vital to many plant and animal communities. Over time, loss of wetlands due to drainage has been a significant problem. Map 5-6 shows the floodplains for Polk County.

Forests and Woodlands

Forests and woodlands are an important feature of Polk County. In fact, its forests are the second most extensive land use and land cover after agriculture. Forests are located throughout the County, but increase in density from south to

north. The largest concentrations of woodlands occur in the northern portion of the County (See Map 5-7).

Assessed forest acreage increased by roughly 15,000 acres, or over 23 square miles, between 1990 and 2007 (see Table 5.7). This was an 11 percent increase. Between 1990 and 2007 the towns of Lincoln (3,785 percent), Clear Lake (1,924 percent), Eureka (190 percent) and Clayton (165 percent) saw the largest percentage increases in assessed forested acreage. In 2007, the towns of Clam Falls (10,157), Eureka (9,323), Sterling (8,674), and Luck (8,088) had the greatest amount of assessed forested acreage, respectively. At the same time, Garfield (4,086), Clear Lake (4,209), and Lincoln (4,351) had the least amount of assessed forested acreage. The greatest percentage decreases occurred in the towns of Lorain (-27.5 percent) and Farmington (-27.3 percent).

In Polk County, woodlands are an important part of the environment, aesthetics, and economy. Woodlands provide:

- Habitat for a variety of plants and animals;
- Hunting
- The basic resource for many wood-based industries, including the expanding bio-energy sector;
- Resources for the agricultural community;
- An environment for recreational activities; and
- For the scenic beauty of the landscape and the rural character of the county.

Table 5.7 - Assessed Forest and AG Forest Parcels and Acreage by Town - 1990 - 2007 – Polk County

	Total Parcels				Total Acres			
Town	1990	2007*	# Change	1990 - 2007 % Change	1990	2007*	# Change	1990 - 2007 % Change
Alden**	624	551	-73	-11.7	8,296	7,472	-824	-9.9
Apple River**	344	435	91	26.5	7,697	7,663	-34	-0.4
Balsam Lake	116	275	159	137.1	3,361	5,265	1,904	56.6
Beaver	244	378	134	54.9	6,280	7,064	784	12.5
Black Brook	210	323	113	53.8	4,175	4,985	810	19.4
Bone Lake	469	460	-9	-1.9	8,887	7,324	-1,563	-17.6
Clam Falls	447	494	47	10.5	10,347	10,157	-190	-1.8
Clayton	72	328	256	355.6	2,052	5,444	3,392	165.3
Clear Lake	10	254	244	2440.0	208	4,209	4,001	1923.6
Eureka	135	551	416	308.1	3,210	9,323	6,113	190.4
Farmington**	326	213	-113	-34.7	6,320	4,595	-1,725	-27.3
Garfield	255	301	46	18.0	4,276	4,086	-190	-4.4
Georgetown	219	335	116	53.0	5,738	6,401	663	11.6
Johnstown	319	317	-2	-0.6	9,225	7,507	-1,718	-18.6
Laketown	287	361	74	25.8	4,896	5,550	654	13.4
Lincoln	5	246	241	4820.0	112	4,351	4,239	3784.8
Lorain	341	247	-94	-27.6	7,404	5367	-2,037	-27.5
Luck	279	421	142	50.9	6,273	8088	1,815	28.9
McKinley**	228	265	37	16.2	6,623	6,249	-374	-5.6
Milltown	238	307	69	29.0	4,576	4,840	264	5.8
Osceola	203	416	213	104.9	4,585	4,939	354	7.7
St. Croix Falls	237	275	38	16.0	5,074	5,169	95	1.9
Sterling	367	569	202	55.0	8,969	8,674	-295	-3.3
West Sweden	410	401	-9	-2.2	8,460	7,405	-1,055	-12.5
TOTALS	**6,385**	**8,723**	**2,338**	**36.6**	**137,044**	**152,127**	**15,083**	**11.0**

Source: Wisconsin Department of Revenue
** Between 2003 and 2007, the Department of Revenue changed the classification system and included the category "AG Forest". This alteration has in most cases influenced the comparison of 2007 data and the data from the previous three years.*
*** Data were not available for 1990. 1989 data were used.*

Woodlands managed according to approved forest management practices can support varying and sometimes complementary objectives, such as timber production and wildlife habitat. On the other hand, strict preservation of woodlands would be unusual and reserved for the most rare and unique stands in the County.

Unmanaged development and the fragmentation of woodlands in residential lots can diminish or eliminate a woodlands capacity to provide wood products, habitat for plants and animals, and aesthetic quality. Polk County has experienced a loss of some woodland acres, in part due to the subdividing of woodlands into residential lots. Because woodlands are considered a valued resource for these reasons, significant woodlands are often protected from conversion to other uses or properly managed in order to retain their desirable characteristics. For example, residential development in woodland areas could

use conservation/cluster design techniques in order to allow for development and preserve the environmental and aesthetic value. Map 5-7 shows the forest lands in the county, according to assessments.

Grasslands and Prairie

Very few parts of Polk County were originally covered by prairie, most of which does not remain today. Existing grassland areas are spread throughout the county.

Prairie is the term used to describe the grassland type that predominated in Wisconsin prior to Euro-American settlement. Prairies are dominated by grasses and sedges, lack trees and tall shrubs, and are home to a rich variety of plants and animals. Within the prairie designation there are variations due to soils and climate. Prairies continue to be a threatened plant community in Wisconsin. The reduction of prairie in the state means that an estimated 20 percent of the original grassland plants are considered rare in the state. Consequently, many species of plants and animals associated with Wisconsin prairies are endangered, threatened or of special concern.

There are few high quality prairie remnants remaining. Research shows it will take more than the preservation of these remnants to recover or retain the biodiversity this ecosystem can offer. Degraded areas that were once prairie can often be restored with moderate effort to yield a habitat suitable for most of the associated plant and animal species. Even certain managed agricultural and livestock practices can accommodate the maintenance of the open habitats needed by many grassland species. Grasslands can be restored and maintained through preserving a certain amount of open space for this type of cover as development occurs. Hence, development can occur in such a way that it can maintain sufficient grasslands for its habitat value while preserving the rural character of the landscape.

Wildlife, Wildlife Habitat, and Open Space

Scattered throughout Polk County are various federal, state, and local wildlife, fishery, natural, and scientific areas, including private conservancy areas. These often encompass one or more of the sensitive land areas discussed previous (e.g., wetlands, forests, shorelands, prairies). These areas are managed as open space to provide important feeding, breeding, nesting, cover, and other habitat values to a wide variety of plant and animal species. Agricultural lands can also provide important open space and wildlife habitat, while maintaining the rural character of the area.

Rare and Endangered Species and Natural Communities

According to the Wisconsin Department of Natural Resources Natural Heritage Inventory, Polk County is home to 54 animal species, 25 plant species, and 29 natural communities that can be considered rare or endangered.

The Natural Heritage Inventory is a statewide inventory of known locations of rare and endangered species and communities. This information is for general planning purposes only, and the lack of known occurrences in an area does not mean that no significant endangered resources are present. These species and communities are listed on Map 5-12, provided by the Wisconsin Department of Natural Resources. The specific locations of some resources may not be mapped due to their sensitive nature and in order to minimize impacts. Twenty (20) Polk County species have been categorized as endangered by the Wisconsin Department of Natural Resources:

Mountain Cranberry	(Plant)
Buckhorn	(Mussel)
Butterfly	(Mussel)
Crystal Darter	(Fish)
Dotted Blazing Star	(Plant)
Ebony Shell	(Mussel)
Elephant Ear	(Mussel)
Greater Redhorse	(Fish)
Higgens' Eye	(Mussel)
Loggerhead Shrike	(Bird)
Monkeyface	(Mussel)
Pallid Shiner	(Fish)
Purple Wartyback	(Mussel)
Red-necked Grebe	(Bird)
Saint Croix Snaketail	(Dragonfly)
Salamander Mussel	(Mussel)
Snuffbox	(Mussel)
Spectacle Case	(Mussel)
Trumpeter Swan	(Bird)
Winged Mapleleaf	(Mussel)

State Natural Areas

Currently, there are seven State Natural Areas in Polk County. State Natural Areas are managed to protect rare plants, animals, or native landscapes. State Natural Areas may be part of a larger State Wildlife Area, though permitted recreational activities may be less intensive. The seven State Natural Areas consist of:

Centennial Bedrock Glade - Interstate Park, Polk County - 17 acres.
Dalles of the St. Croix River - Interstate State Park, Polk County - 87 acres.
Farmington Bottoms - St. Croix National Scenic Riverway - 1238 acres.
Interstate Lowland Forest - Interstate State Park - 124 acres.
Osceola Bedrock Glades - 39 acres.
Sterling Barrens - Governor Knowles State Forest and the St. Croix National Scenic Riverway - 993 acres.
Tula Lake - McKenzie Creek Wildlife Area, Polk County - 120 acres.

Wisconsin's Land Legacy Report

The Wisconsin Department of Natural Resources has completed a draft study that identifies unique places that are critical to meeting Wisconsin's future conservation and recreation needs for the next 50 years. A range of criteria were used in determining these places, including: high quality ecosystems, outstanding scenic beauty, accessibility, recreational opportunities, size of the resource, networks between resources, and water quality protection. The following locations in Polk County were identified as important legacy places: Apple River, Balsam Branch Creek and Woodlands, Big Rock Creek, Clam River, Danbury to Sterling Corridor, Lower St. Croix River, and St. Croix River. Map 5-13 shows the Ecological Landscapes of Polk County.

AR Apple River (Forest Transition Ecological Landscape)

Size..... Small
Protection Initiated..... Moderate
Protection Remaining..... Moderate
Conservation Significance..... **
Recreation Potential..... ***

The upper stretches of the Apple River snake through two state properties, the Loon Lake and Rice Beds Creek Wildlife Areas. These two properties support a variety of grasslands, wetlands, numerous small glacial pothole lakes, and oak, aspen, and northern hardwood forests. North of Rice Beds Creek Wildlife Area are large blocks of northern hardwood forest with old-growth characteristics. The area potentially offers a variety of recreation uses.

BS Balsam Branch Creek and Woodlands (Forest Transition Ecological Landscape)

Size . . . . . .Small
Protection Initiated. . . Limited
Protection Remaining. . . Moderate
Conservation Significance. . . *
Recreation Potential . . . ***

This area is characterized by rolling upland and lowland forest, grassland, and wetland. A small existing wildlife area is a mix of restored grassland and forest with a shallow lake in the center of the property. Surrounding the property are sizable woodlands and farmlands interspersed with lakes and streams. South of Balsam Lake lies a large forested block containing a good quality northern hardwoods community. On the north side of Balsam Lake lies Stump Bay, a high quality wetland area. Opportunities exist to maintain open space and provide additional public recreation.

BC Big Rock Creek (Forest Transition Ecological Landscape)

Size . . . . . .Small
Protection Initiated. . . . Limited
Protection Remaining. . . Moderate
Conservation Significance. . . . **
Recreation Potential . . . ***

Big Rock Creek flows into the St. Croix River, with part of the creek classified as Class II trout water. The mostly forested watershed contains one of the largest intact blocks of woods in west-central Polk County. Much of this small, scenic valley is surrounded by farmland and fallow land converting to upland brush. The area is under considerable development pressure and maintaining the mix of forests and farms would provide considerable conservation and recreation benefits. Recreation opportunities could include fishing, hunting, nature study, and other low-impact uses. This property abuts the City of St. Croix Falls.

CR Clam River (Northwest Sands Ecological Landscape)

Size . . . . . .Medium
Protection Initiated. . . Moderate
Protection Remaining. . . . . Substantial
Conservation Significance. . . ***
Recreation Potential . . . . . ****

The Clam River is a lightly developed, 55-mile long river, originating in Polk County and flowing northwesterly through Burnett County before entering the St. Croix River. The river corridor is heavily forested with bottomland hardwoods along part of its course. Adjacent uplands along the upper half of the river consist of mixed farmland, forest, and bedrock glade, while the lower half winds through sand country characterized by dry jack pine-Hill's oak forests and remnant barrens. The river's headwaters and tributaries are high quality trout water known especially for their excellent

brown trout fishing. Downstream the river contains spawning areas for lake sturgeon, walleye, smallmouth bass, buffalo and carpsuckers. Several lakes and impoundments along the mid to lower stretches contain wild rice stands and provide excellent lake fishing and waterfowl hunting. The area has high recreation potential and currently receives considerable fishing pressure in the upper reaches and is a popular canoeing river in the lower reaches. The State currently manages three projects in the headwaters area (Sand Creek and Clam River Fisheries Areas and McKenzie Creek Wildlife Area). Most of the Clam River is located within a 1½ hour drive of the Twin Cities.

DS Danbury to Sterling Corridor (Northwest Sands Ecological Landscape)

Size . . . . . .Large
Protection Initiated. . . . . Substantial
Protection Remaining. . . . . Moderate
Conservation Significance. . . . . *****
Recreation Potential . . . . . ***

The Danbury to Sterling corridor is located on sandy glacial outwash. Historically, the area was a fire dependent, open mosaic of prairie, brush land, and savanna, with occasional stands of coniferous, deciduous, or mixed forest. Currently, many lands are being managed predominantly for jack pine pulpwood. The resulting mosaic of cut-over, standing timber, and young forests provides excellent habitat for white-tailed deer, wild turkey and ruffed grouse.

Danbury, Crex Meadows (written up separately), Amsterdam Sloughs, and Fish Lake State Wildlife Areas, as well as Burnett and Polk County Forests, are within this corridor and provide a variety of exceptional wildlife habitats and recreation opportunities. Waterfowl and shorebirds, in particular, are attracted to the large, high quality wetlands. The St. Croix National Scenic Riverway and Governor Knowles State Forest lie on the west edge of the area. Providing ecological links between these public properties would enable them to meet the needs of species that require very large amounts of habitat. In particular, sharptailed grouse are believed to need thousands, if not tens of thousands, of acres of habitat to support a population that can remain viable over a long period of time. This corridor has the opportunity to support such a large population (Crex Meadows already harbors the largest population east of the Mississippi River). The Danbury to Sterling Corridor is

also a prime area for recovery of the federally-endangered Karner blue butterfly.

LT Lower St. Croix River (Western Prairie Ecological Landscape)

Size . . . . . .Large
Protection Initiated. . Substantial
Protection Remaining. . . . . Limited
Conservation Significance. . . . . *****
Recreation Potential . . . . . ****

The Lower St. Croix National Scenic Riverway extends 52 miles along the border of Minnesota and Wisconsin, from the dam at St. Croix Falls to its confluence with the Mississippi River. The last 25 miles of river are wide, gently flowing, and bordered by heavily wooded bluffs. The Riverway is very popular with enthusiasts that enjoy boating, canoeing, fishing, rock climbing and hiking along its scenic shoreline. Congress added this segment of the St. Croix River to the National Wild and Scenic Rivers program in 1972, complementing the previous (1968) designation of the Upper St. Croix River. Many rare species are associated with the St. Croix and the corridor is highly significant to migratory birds.

SX St. Croix River (Northwest Sands Ecological Landscape)

Size . . . . . .Large
Protection Initiated. . . . . Substantial
Protection Remaining. . . . Limited
Conservation Significance. . . . *****
Recreation Potential . . . ****

Flowing out of the spring-fed Upper St. Croix Lake, the river begins as a shallow, narrow, relatively fast waterway. Here in its upper reaches, the river flows through stands of cedar, spruce, and tamarack in the Douglas County Forest. The area harbors a variety of nesting birds and rare plants. Near the Namekagon Barrens, the St. Croix is joined by the Namekagon River and enters the Northwest Lowlands ecological landscape. The river continues to the southwest and forms the boundary of this ecological landscape. As such, the rivers that flow off the Northwest Sands to the west—including the Totagatic, Yellow, and Clam—play critical roles in the St. Croix River's water quality and quantity. The St. Croix valley forms an important ecological connection between the Mississippi River and the Great Lakes, via the Brule River State Forest. In this

upper stretch, the St. Croix receives light recreational pressure, mostly fishing and canoeing.

SX St. Croix River (Forest Transition Ecological Landscape)

Size . . . . . .Large
Protection Initiated. . . . . Substantial
Protection Remaining. . . . . Limited
Conservation Significance. . . . . *****
Recreation Potential . . . . . ****

Flowing out of the spring-fed Upper St. Croix Lake, the river begins as a shallow, narrow, relatively fast waterway. After receiving the large volume of the Namekagon River, the river slows, widens and deepens, flowing through a wide valley with low banks. The valley is dominated by high quality mature hardwood forest. The river harbors a very diverse assemblage of aquatic species, including a variety of gamefish as well as many rare species. In this Ecological Landscape the river is a very popular boating and paddling destination and offers some of the Midwest's most dramatic scenery. Much of the river frontage here is protected within the National Park Service's St. Croix National Scenic Riverway and the Governor Knowles State Forest. Outside of this ribbon of land are large holdings of County Forest and State Wildlife Areas. The St. Croix River valley forms the "tail" of this Ecological Landscape; just north of St. Croix Falls, it enters the Western Prairie Ecological Landscape.

SR Straight River Channel (Forest Transition Ecological Landscape)

Size . . . . . .Medium
Protection Initiated. . . . . Limited
Protection Remaining. . . . Substantial
Conservation Significance. . . *****
Recreation Potential . . . . ****

Appropriately named, the Straight River flows within a near perfectly straight valley in northern Polk County. This valley is believed to have been carved by water shot out of the bottom of the glacier under high pressure. The Straight River Channel is considered to be the finest example of this rare glacial phenomenon in Wisconsin. The river passes through Straight Lake and then ends in Big Round Lake. The Straight River Channel lies within a mix of farmland and forest that is intermingled with

numerous pothole lakes. The larger lakes are mostly developed. The Straight River is a moderate sized river that supports a warmwater fishery.

Straight Lake, an adjacent unnamed lake, and approximately the first two miles of the Straight River are undeveloped and surrounded by a large block of forest. The lake and surrounding forest support a very diverse assemblage of species, including the highest density of the state-threatened Cerulean warbler of any location known in northern Wisconsin, and represent one of the largest and highest quality forest-lake complexes in this ecological landscape. Some high quality wetlands, both forested and open, occur here as well. The uplands support some huge white pines and an intact forest understory. Bald eagles and trumpeter swans frequent the area. The area is now the site of the newest Wisconsin State Park and Wildlife Area. The Ice Age Trail passes through the area and acts as a recreation link from McKenzie Creek State Wildlife Area, which lies about 2 miles to the northeast, to the large blocks of public forest in western Polk and Burnett counties. The Twin Cities lie approximately 50 miles to the southwest.

TA Trade River Wetlands (Forest Transition Ecological Landscape)

Size . . . . . .Small
Protection Initiated. . . Limited
Protection Remaining. . . . Moderate
Conservation Significance. . . . . ***
Recreation Potential . . . *
This wetland complex is located in the Trade River watershed of the St. Croix Basin and straddles the Polk/Burnett County boundary. Historically, these wetlands were located at the convergence of several ecological communities: tallgrass prairie, oak savanna, barrens, and southern mesic hardwoods. The surrounding land is rolling and soils are silt loams. The Trade River is a somewhat degraded coldwater river.

TA Trade River Wetlands (Forest Transition Ecological Landscape)

Size . . . . . .Small
Protection Initiated. . . . . Limited
Protection Remaining. . . . . Moderate
Conservation Significance. . . . . ***
Recreation Potential . . . *

This wetland complex of marsh, sedge meadow, and shrub swamp is located in the Trade River watershed of the St. Croix Basin and straddles the Polk/Burnett County boundary. Historically, these wetlands were located at the convergence of several natural communities: mesic prairie, oak savanna, barrens, and southern mesic hardwoods. The surrounding land is rolling and soils are silt loams. The Trade River is a somewhat degraded coldwater river that flows to the St. Croix.

WP Western Prairie Habitat Restoration Area (Western Prairie Ecological Landscape)

Size . . . . . .Large
Protection Initiated. . . . . Moderate
Protection Remaining. . . . . Substantial
Conservation Significance. . . . . ****
Recreation Potential . . . . . **

The Western Prairie Habitat Restoration Area was established in 1999 to protect and restore up to 20,000 acres of grassland and wetland habitat in western St. Croix and southwestern Polk counties. The project's goal is to protect and restore scattered blocks of prairie, savanna and wetland within a larger area of farm fields and low density development. Such a "checkerboard" pattern, combining working farms and native prairie/savanna vegetation, would meet the habitat needs of many grassland species. It may also help buffer both farms and natural areas from conflicts with residential development. Although work on this project is just beginning, interest is high and there is good local support. Most public lands within the Western Prairie Habitat Restoration Area will be open to the public for hunting, hiking, wildlife watching and educational activities.

Other Areas of Interest

North Pipe Lake Forest (Forest Transition Ecological Landscape)

(*Polk County_*)

This area near North Pipe Lake harbors a rich diversity of ground layer plants growing under immense hardwoods. Numerous ephemeral ponds also occur here and provide habitat for a variety of salamanders and frogs. Map 5-13 shows the Ecological Landscapes of Polk County, according to the WDNR.

Parks and Recreational Resources

Visitors and residents of Polk County have many opportunities to enjoy the natural resources of the County through parks, trails, and other public lands (See Table 5.8). There are 360 miles of maintained and groomed snowmobile trails throughout the County. The Somers Lake Trail has a five mile closed loop trail for cross country skiing and snowshoeing. The Balsam Branch ski trails are also located in the County. These trails are part of a cooperative effort between the County, Lake Wapogasset Lutheran Bible Camp, Garfield Township, D.D. Kennedy Environmental Area, and the Nordic Ski Club of Amery.

There are two state parks in Polk County. Interstate State Park is located in the western portion of Polk County, just outside of St. Croix Falls. The park was established in 1900 and is Wisconsin's oldest state park. The park has two campgrounds with a total of 85 family campsites, and a primitive group camp that accommodates 60 people. The park has a swimming beach and beach house on Lake O' the Dalles. A boat launch gives access to the St. Croix River. Straight Lake State Park was dedicated in 2005. The first-phase purchase included a state park and part of a state wildlife area to the north for which additional land will be purchased later. State officials envision much of the land to be used for silent sports, including hunting, fishing, hiking, non-motorized boating and primitive camping.

The Cattail State Trail and Gandy Dancer State Trail travel through Polk County. The State Department of Natural Resources manages the Balsam Branch Wildlife Area, Behning Creek Fishery Area, East (Lotus) Fishery Area, Joel Marsh Wildlife Area, Loon Lake Wildlife Area, McKenzie Creek Wildlife Area, Omer Springs, Parker Creek Fishery Area, Rice Beds Creek Wildlife Area, Sand Creek Fish and Wildlife Area, Snake Creek Fishery Area, and Wagon Landing Springs Fishery Area. A full range of recreational activities may be pursued at the Wildlife Areas.

Residents and visitors also have the option to enjoy the natural resources of Polk County through many privately operated campgrounds, resorts, and other ventures. Individual cities and villages also maintain their own parks and recreational activities discussed as part of the Utilities and Community Facilities Element. Map 5-8 shows the public lands in Polk County.

Table 5.8 - Parks and Recreational Lands – Polk County

County Resource	Size	Location	Notes
Apple River Park	18 acres	Apple River - N of Amery	Fishing, Hiking Trails, Picnic Area, Playground, Shelter
Atlas Park	87 acres	County Road B	Fishing, Boat Access, Ball Field, Walkway, Picnic Area, Playground, Shelter
Black Brook Park	2 acres	Apple River - SW of Amery	Fishing, Picnic Area
D.D. Kennedy Environmental Area	106 acres	Balsam Branch between Amery and Balsam Lake	Fishing, (bridge and handicap accessible pier), Hiking Trails-Interpretive, Picnic Area, Shelter
Lotus Park	18 acres	East Lake – SE of Dresser	Fishing, Boat Access, Hiking Trails, Picnic Area, Playground, Shelter
State Park & Wildlife Areas	**Size**	**Location**	**Notes**
Interstate State Park	298 acres	St. Croix Falls	Camping, Fishing, Picnic Area, Boat Launch
Straight Lake State Park	2,780 acres	12 miles NE of St. Croix Falls	State officials envision much of the land to be used for silent sports, including hunting, fishing, hiking, non-motorized boating and primitive camping.
Balsam Branch Wildlife Area	180 acres	150th Street and 115th Ave	Hunting, Trapping, Hiking, Berry Picking, Wildlife Viewing
Behning Creek Fishery Area	171 acres	Four miles SE of Dresser on 90th Ave.	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
East (Lotus) Fishery Area	30 acres	90th Ave – Two miles SE of Dresser	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Joel Marsh Wildlife Area	1,192 acres	Two miles W of Turtle Lake – Highway 8	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Loon Lake Wildlife Area	3,123 acres	Four miles N of Turtle Lake	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
McKenzie Creek Wildlife Area	5,497 acres	.5 mile south of Clam Falls	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Omer Springs	55 acres	Five miles W of Range	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Parker Creek Fishery Area	197 acres	Three miles SW of Amery - 35th St.	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Rice Beds Creek Wildlife Area	3,181 acres	Six miles NW of Turtle Lake – Hwy D	Hunting, Trapping, Hiking, Berry Picking, Wildlife Viewing
Sand Creek Fish and Wildlife Area	1,526 acres	12 miles SE of Siren	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Snake Creek Fishery Area	150 acres	Two miles S-SW of Amery – 90th St.	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing
Wagon Landing Springs Fishery Area	66 acres	One mile E of Hwy 65 on 28th St.	Hunting, Fishing, Trapping, Hiking, Berry Picking, Wildlife Viewing

Geology

The land surface of Polk County is strongly affected by thick glacial deposits. Sandstone or limestone bedrock is at or near the surface in only a few places. Some low ridges of Keweenawan trap, a rock formation which was originally hot molten lava, are in the north-central part of the county. The erosive action of the St. Croix River has exposed extensive areas of this formation at St. Croix Falls.

During the last major glacial advance, the Wisconsin stage, ice covered all of Polk County. In general, the ice lowered the preglacial relief because it eroded the tops of the bedrock hills more severely than the valley bottoms. Two different substages of glaciation are evident in Polk County. The most extensive, the Cary substage, covers most of the county. The Cary-age drift, also known as Young Red Drift of Minnesota, entered the area from the northeast. It was picked up in the Lake Superior region as the ice sheet moved from the Partician center into Wisconsin and Minnesota. The reddish color probably is derived from the Upper Keweenawan sandstones and shales and the Huronian iron formation.

Mankato-age drift, also known as Young Gray Drift, is in the northwestern part of the County. Originating in the Kewatin center, it passed over the limestone deposits in southern Canada. Most of this till is calcareous. A map of the geology of Polk County can be found on Map 5-9.

Soils

Soil properties are an important factor in how land is used. Soils determine how productive farmland is, and the type and amount of development that can be reasonably supported based on the various soil characteristics. In fact, the best use of the land is often dictated by the types of soils there are in an area. Subsequently, identifying and reviewing soil suitability interpretations, for specific urban and rural land uses, are essential for physical development planning and determining the most suitable land use.

The following is a listing of the generalized soils located in Polk County

Cushing-Rifle Association
Magnor-Freeon Association
Amery-Santiago-Magnor Association
Omega-Newson-Nymore Association
Antigo-Rosholt Association
Burkhardt-Dakota Association
Rosholt-Cromwell-Menahga Association
Alban-Campia-Comstock Association

Each association contains several major and minor soils in a pattern that varies throughout the association. The soils within an association differ in many properties such as drainage, wetness, slope, and depth to bedrock. These characteristics affect the suitability of the land for agriculture and for development. For these reasons, the generalized information provided in this report is intended to be used for general policy and planning purposes, and not to provide information for site-specific applications.

Based on the *Polk County Soil Survey*, and the National Resource Conservation Service's most recent interpretation of soil limitations, 90 percent of the land area in Polk County has severe limitations for septic tank absorption fields, with the remaining 10 percent having slight or moderate limitations. Severe limitations can require special design, significant increases in construction costs, increased maintenance, or be unsuitable for private sanitary systems.

Mineral Resources

There are no metallic mining operations in Polk County. According to the Wisconsin DNR, there are currently no known metallic mineral deposits or occurrences in sufficient tonnage and grade in Polk County to warrant extraction.

Polk County has 66 operating non-metallic mining sites permitted under Chapter NR 135 of the Wisconsin Administrative Code, which includes three sites operated by the Polk County Highway Department. Most other mine sites are privately operated, primarily for road aggregate, concrete mix and construction fill. Chapter NR 135 covers annual permitting by local governments and the reclamation of non-metallic mine sites.

Supplies of sand and gravel are available throughout Polk County. The west-central portion of the county has the densest concentration of potential sand and gravel deposits. The soils amongst glacial outwash are the most likely sources for sand and gravel as the melting waters of the glacier were most active in sorting and depositing high-quality sand and gravel in this area. Where the bedrock is at or near the surface of the ground are areas that are possibly more suited for quarrying stone. It is helpful to identify the locations of these deposits so potential extraction sites can be considered before development occurs. Development almost always precludes extraction, while these lands can often be reclaimed for development after extraction is complete.

Sand and gravel deposits exist in the County that have a relatively higher potential for extraction based on the National Resources Conservation Service's latest *Soil Survey of Polk County, Wisconsin*. Other local conditions, such as access/egress, existing development, current land uses, ownership, and public sentiment may preclude extraction at some of these locations. As communities

begin to develop local land-use goals, these maps should be considered to reduce potential land-use conflicts. Such mineral resources are important raw material inputs to help achieve the County's land-use plan goal for continuing to provide safe, efficient, and adequate community facilities. Wise use and conservation of the existing mineral resources of the county is a common theme that surfaced in the local level plans. Locations of past and present mining operations are shown on Map 5-9. Probable gravel deposit locations are shown on Map 5-10 and probable sand deposits are shown on Map 5-11

Air Quality

Air quality is an important issue in Polk County. Understanding how air quality is impacted in the County and how it can become contaminated is important to understand. Polk County's air quality is decreasing. A major contributor to this is the burning of wood for heat; outdoor wood boilers, especially, can create localized environments that have unhealthy levels of air quality. Some of the major components of wood smoke are on EPA's list of six "criteria pollutants" in the National Ambient Air Quality Standard (NAAQS), including ozone, carbon monoxide, nitrous oxides, particulate matter, and sulfur dioxide. The adoption of local ordinances regulating outdoor wood stoves is currently the best way to address the issue proactively. This issue will only increase due to the increases in other fuel costs and a renewed interest in using local and renewable resources for energy.

Steep Slopes

It is generally more desirable, both environmentally and economically, to avoid steep slopes and disrupting natural drainageways with construction and land development. Problems with erosion and runoff pollution can occur with development on steep slopes, and flooding and wet basements can occur with drainageway disruptions.

Steep slopes are any area where the gradient of the land is 13 percent or greater (each percent of slope is measured as one unit in elevation for every 100 horizontal units). Areas having steep slopes can be categorized into two levels, 13 percent up to 20 percent slope and greater than 20 percent.

Development on slopes of 13 percent up to 20 percent should consider direct runoff into lakes, rivers, or streams, follow state approved construction site erosion control standards, and institute best management practices to control on-site runoff and pollution. Land with slopes of greater than 20 percent represent a definite limiting environmental condition. Development on these slopes results in high construction costs and severe erosion with resultant negative impacts to surface and ground waters. Due to these factors, development on these slopes is highly discouraged, especially in shoreland areas.

Based on the Soil Survey for Polk County, there are 95,661 acres that potentially have a slope of 13 percent or greater representing 16.3 percent of the total land base. Of this, 31,105 acres (5.3 percent) have slopes of 21 percent or greater. The majority of these steep slopes are located in the western and far northern and far southern portions of the county. These relief changes can be seen on the elevation map, Map 8-5 and the percent slope map, Map 8-6. Keep in mind that these maps were developed from data with 10-meter accuracy, so additional localized and site-specific variations in topography and slope may exist. Glacial activity created some scenic topography, but may also be very sensitive to development activities.

5.5 CULTURAL RESOURCES

Polk County has a long and storied history, with many significant sites. These sites include Native American encampments, fur trading outposts, lumbering camps, and historic buildings. Historic structures, sites, and districts are often targeted for hazard mitigation strategies due to their unique, often irreplaceable, social value. Such historic resources can also be responsible for defining much of a community's identity.

According to the National Register of Historic Places, Polk County has 10 historic properties and one historic district that have received federal historic landmark designation (See Table 5.9).

Additional older structures and homes within Polk County also likely qualify for the National Register of Historic Places. For instance, the Wisconsin Historical Society maintains the Wisconsin Architecture and History Inventory (AHI). This is a database of approximately 120,000 buildings, structures, and objects that illustrate Wisconsin's unique history. The AHI documents a wide range of historic properties, mostly privately owned, such as the round barns, log houses, metal truss bridges, small town commercial buildings and Queen Anne houses that create Wisconsin's distinct cultural landscape. The inventory is not comprehensive, and in some cases, the inventory may be dated if structures are altered or no longer exist.

Table 5.9 - Site and Structures on the National Register of Historic Places – Polk County

Historic Site	Location	Municipality	Listed
Cushing Land Agency Building	106 S. Washington	St. Croix Falls	2005
Dallas Bluff Site	Address Restricted	St. Croix Falls	1981
Fredric Depot	210 Oak St.	Fredric	2003
Geiger Building	201 Cascade St.	Osceola	1985
Heald, Alvah A. House	202 Sixth Ave.	Osceola	1985
Lamar Community Center	NE of St. Croix Falls	St. Croix Falls	1982
Minneapolis, St. Paul, and Sault Saint Marie Railway Depot	114 Depot Rd.	Osceola	2000
Osceola Commercial Historical District	Along Cascade St. from First Ave. to Third Ave.	Osceola	2000
Polk County Courthouse	Main St.	Balsam Lake	1982
Seven Pines Lodge	SE of Lewis on WI 35	Lewis	1978
Thompson, Thomas Henry, House	205 S. Adams St.	St. Croix Falls	1984

Source: National Register of Historic Places < http://www.nationalregisterofhistoricplaces.com >. August 22, 2008

In Polk County, a total of 130 historic places and objects have been identified as having historic value and are on the AHI (See Table 5.10). The majority of these places are privately owned homes. Some locations may have multiple records or historic buildings.

Any development should be reviewed, pursuant to Wisconsin Statute 44.40 (1989), against the historic resource list to determine whether historic properties within the area will be affected. The Wisconsin Historical Society should be contacted for a determination of possible impacts on these resources from development. The Historical Society also strongly recommends that all proposed developments be surveyed by a qualified archeologist to identify any sites.

Table 5.10 - Architecture and History Inventory Listings – Polk County

Municipality	# of AHI Records
Towns	
Alden	1
Apple River	2
Balsam Lake	1
Beaver	6
Black Brook	0
Bone Lake	1
Clam Falls	8
Clayton	0
Clear Lake	0
Eureka	3
Farmington	5
Garfield	1
Georgetown	0
Johnstown	0
Laketown	1
Lincoln	0
Lorain	6
Luck	1
McKinley	18
Milltown	0
Osceola	22
St. Croix Falls	n/a
Sterling	0
West Sweden	7
Villages	
Balsam Lake	2
Centuria	0
Clayton	3
Clear Lake	1
Dresser	2
Frederic	4
Luck	0
Milltown	0
Osceola	31
Turtle Lake	0
Cities	
Amery	0
St. Croix Falls	4

Source: Wisconsin Historical Society< http://www. wisconsinhistory.org/>. 2008.

The Wisconsin Historical Society has grant funding available to help local communities undertake a historical survey, with additional grant funds for a variety of historic preservation activities. In addition, historic commercial structures on the National Register, or historic commercial structures located in a historic district, may also qualify for tax credits. Owner-occupied homes that are eligible for listing in the National Register do not have to be formally listed in the National Register to be eligible for historic preservation tax credits for rehabilitation projects.

5.6 SWOT ANALYSIS

Strengths

- Agricultural diversity (diversity of farm types and diversity of what is on an individual farm)
- It's not too late – we still have the land, the soil, the water
- Geographic locations – forests, agriculture, lakes
- Active county and community cultural/historical societies;
- Strong private organizations/associations in the area - Lakes Associations; Apple River Association; St Croix River Association, Dept of Interior takes care of national parks, national waterways, Ducks Unlimited, Whitetails Unlimited, Trout Unlimited, Polk County Association of Lakes and Rivers, etc.
- Good base of public land; county, State and federal
- Just on the edge of the northwoods
- 42,000 acres public land
- Lakes – 23,000 acres of water over 200 named, over 400 lakes; relatively clean, in various stages
- Over 1.7 million feet of lakeshore in Polk County
- Diversity of landscapes
- Interstate park
- DD Kennedy County Park
- Ice Age Trail
- Gandy Dancer
- Historic building, barns, Century Farms, courthouse, old school sites, 700 million year old mountains,
- Native American sites
- Local events/unique celebrations
- Rustic Roads
- Downtown facades
- Small town, rural atmosphere
- DNR Legacy Places within the County
    - Apple River
    - Balsam Branch Creek and Woodlands
    - Big Rock Creek

  - Clam River
  - Danbury to Sterling Corridor
  - Lower St. Croix River
  - St. Croix River
  - Straight River Channel
  - Trade River Wetlands
  - Western Prairie Habitat Restoration Area

Weaknesses

- Lack of funds for preservation &/or management of natural resources
- Lack of awareness of programs that provide alternatives to subdivision of land
- Politics
- Property tax structure
- Development has already occurred especially along waterfront
- Regulations

Opportunities

- Utilizing program that provide alternatives to traditional development or subdivision (Purchase of Development Rights, Transfer of Development Rights, Density Bonuses, Conservation/Cluster Development, Working Lands Initiative, Conservation Easements, etc.)
- Utilizing grants
- Renewable Energy Committee
- Biofuels/Alternative Energy/Renewable Energy
- Preserving land: West Wisconsin Land Trust, Polk County holds conservation easements
- Working with local non-profits and other groups to maintain and improve our agricultural, natural, and cultural resources and save money
- Publish inventory of cultural resources; natural resources, and agricultural resources
- Nutrient management plans
- Organic farming
- Openness to new markets in agriculture
- Education of all who live, work, and/or play in Polk County on issues related to agricultural, natural, and cultural resources

Threats

- Fragmentation of farmland
- Farm parcels becoming too small
- Nitrates continue to pollute our groundwater
- Lack of money
- Nitrates

- Eutrophication (highly productive lakes, algae, plant growth, etc.) of lakes
- Pollution
- Runoff
- Fragmentation
- Lack of regulations
- Weak regulations
- Lack of ability to enforce regulations
- Development & development pressures
- Loss of habitat
- Loss of biodiversity
- Lakes - most are mesotrophic (medium productivity lakes), not many young lakes which are highest quality; human intervention significantly speeding up the deterioration of our lakes
- Pesticides
- Human population increase
- Soil erosion from cropland
- Soil erosion from construction sites
- Improper application of fertilizers and manure, management of lawns
- Hazardous waste
- Invasive Species
- Hazardous waste
- Mining
- Overabundance of deer
- Deterioration of historic resources
- Lack of education/information on what is historic
- Development pressures
- New demand for facilities/utilities

5.7 GOALS, OBJECTIVES, AND POLICIES

Agricultural Resources

Goal 1: Promote the agricultural industry as a respectable, viable, and diverse farm economy

Goal 2: Protect, promote, and preserve the remaining agricultural resources within the county

Objectives:

1) *Protect agricultural lands and soil*
2) *Encourage or possibly require farming techniques that improve or do not harm water resources*
3) *Promote sustainable use of utilizing fertilizers/manure/pesticides in a manner that improves/maintains agricultural productivity but does not negatively affect water quality*
4) *Promote locally grown and sustainable agriculture and the local purchase of the above*
5) *Maintain a broad base of agriculture*
   a) Old (cows, corn, beans)
   b) New(local produce, organic, Community Supported Agriculture)
6) *Avoid fragmentation of farmland*
7) *Maintain Agricultural infrastructure*
8) *Continue current and develop additional educational efforts on informing new residents, builders, etc. about Right-to-Farm and/or the rural nature of Polk County*

Policies:

1) Maintain and further utilize/distribute the Rural Living Guide
2) Encourage stores to carry locally grown and produce items
3) Encourage consumers in Polk County to buy locally grown and produced items

Natural Resources

Goal 1: Recognize the environment as an integrated system of land, water, and air resources.

Goal 2: Minimize the potential impacts on natural resources, environmental corridors water resources, and wildlife habitats when evaluating potential residence, communities, industrial/mining, and intensive agricultural uses

Objectives:

1) *Maintain high quality and the quantity of surface water & groundwater*

2) *Encourage the use of conservation practices and management in wildlife habitat*
3) *Maintain good air quality*
4) *Preserve large tracks of forest lands and open spaces*
5) *Promote the continuing education of our government officials on sustainable use of natural resources.*
6) *Maintain the quality of Polk County's public recreational facilities*
7) *Protect natural resources from mining activities*
8) *Invasive Species eradication, prevention, and mitigation*

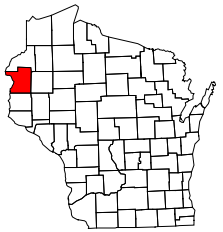
Policies:

1) Establish policies that protect ecosystems
2) Encourage the development of regulations that protect Polk County's natural resources, especially water
3) Promote use of voluntary conservation easements
4) Encourage the use of conservation practices in the management of forest lands.
5) Support, improve, and enforce the existing shoreland ordinance
6) Encourage vegetated buffers along waterways
7) Encourage the development of additional parks & recreation opportunities
8) Ensure that all impacts to the environment are considered before mines are approved
9) Encourage utilization of Environmental Impact Studies or similar to evaluate impacts of mining
10) Establish baseline data and/or compile existing data so we know where we are at presently
11) Improve cropland nutrient management planning
12) Control cropland soil erosion
13) Promote proper closure of abandoned manure pits, abandoned wells, abandoned septic and holding tanks
14) Control stormwater runoff

MAP 5-1

2008 AERIAL PHOTO

Polk County Wisconsin



State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD

0 1.5 3 6 Miles

N

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Geographic Information Systems Division
100 Polk County Plaza, Suite 130
Balsam Lake, WI 54810
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Fax: 715.485.9246
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6/10/09

MAP 5-2

PRIME AGRICULTURAL SOILS

Polk County Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

ST CROIX COUNTY

BARRON COUNTY

ST CROIX COUNTY

Soils Class

I

II

III

Source:
Natural Resources Conservation Service
(NRCS)
Soil Survey Geographic
(SSURGO) Database

US HIGHWAY SHIELD

STATE HIGHWAY SHIELD

COUNTY ROAD SHIELD

US HIGHWAY

STATE HIGHWAY

COUNTY ROAD

0 1.5 3 6 Miles

N

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MAP 5-3

DEPTH TO GROUNDWATER TABLE

Polk County Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

DEPTH TO GROUNDWATER

- 0 TO 2O FEET
- 20 TO 50 FEET
- GREATER THAN 50 FEET

Groundwater Data Source:
Wisconsin Dept. of Natural Resources

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- HYDRO STREAM
- HYDRO BODY
- CITY/VILLAGE
- TOWNSHIP

0 1.5 3 6 Miles

N

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MAP 5-4
SURFACE WATER
Polk County
Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

US HIGHWAY SHIELD

STATE HIGHWAY SHIELD

COUNTY ROAD SHIELD

US HIGHWAY

STATE HIGHWAY

COUNTY ROAD

HYDRO STREAM

HYDRO BODY

CITY/VILLAGE

TOWNSHIP

0 1.5 3 6 Miles

N

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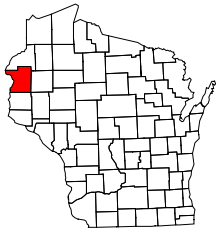
MAP 5-5
FLOODPLAINS
Polk County
Wisconsin



State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- HYDRO BODY
- FLOODPLAINS

Floodplain Data Source:
FEMA/Wisconsin DNR
Preliminary Flood Insurance Study

0 1.5 3 6 Miles

N

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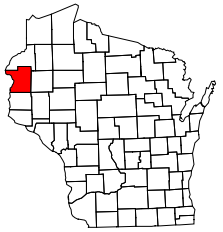
MAP 5-6
WETLANDS

Polk County
Wisconsin



State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- HYDRO BODY
- WETLANDS

Wetland Data Source:
West Central Wisconsin Regional
Planning Commision

0 1.5 3 6 Miles

N

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6/10/09

MAP 5-7
FOREST LANDS

Polk County
Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- HYDRO STREAM
- HYDRO BODY
- CITY/VILLAGE
- TOWNSHIP
- COUNTY FOREST
- FOREST LANDS
- STATE FOREST

0 1.5 3 6 Miles

N

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6/10/09

MAP 5-8
PUBLIC LANDS
Polk County Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

BARRON COUNTY

STATE OF MINNESOTA

ST CROIX COUNTY

ST CROIX COUNTY

GOVERNOR KNOWLES STATE FOREST

POLK COUNTY FOREST LAND

GOVERNOR KNOWLES STATE FOREST

STERLING BARRENS STATE NATURAL AREA

ATLAS COUNTY PARK

STRAIGHT LAKE WILDLIFE AREA

STRAIGHT LAKE STATE PARK

MC KENZIE CREEK WILDLIFE AREA

TULA LAKE STATE NATURAL AREA

POLK COUNTY FOREST LAND

STATE ICE AGE TRAIL AREA

SAND CREEK FISHERY AREA

RICE BEDS CREEK WILDLIFE AREA

LOON LAKE WILDLIFE AREA

JOEL MARSH WILDLIFE AREA

APPLE RIVER COUNTY PARK

D D KENNEDY COUNTY PARK

POLK COUNTY FAIRGROUNDS

DALLES OF THE ST CROIX STATE NATURAL AREA

INTERSTATE STATE PARK

OSCEOLA BEDROCK GLADES STATE NATURAL AREA

BEHNING CREEK FISHERY AREA

FARMINGTON BOTTOMS STATE NATURAL AREA

WAGON LANDING SPRINGS FISHERY AREA

BLACK BROOK COUNTY PARK

PARKER CREEK FISHERY AREA

SNAKE CREEK SPRINGS FISHERY AREA

US HIGHWAY SHIELD

STATE HIGHWAY SHIELD

COUNTY ROAD SHIELD

US HIGHWAY

STATE HIGHWAY

COUNTY ROAD

HYDRO STREAM

HYDRO BODY

CITY/VILLAGE

TOWNSHIP

POLK COUNTY LANDS

FEDERAL LANDS

STATE LANDS

0 1.5 3 6 Miles

N

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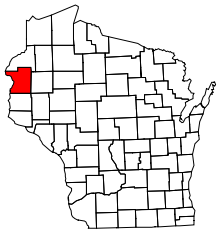
MAP 5-9
GEOLOGY
Polk County
Wisconsin



State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY BARRON COUNTY

STATE OF MINNESOTA

ST CROIX COUNTY

ST CROIX COUNTY

BARRON COUNTY

MAJOR LITH

- BASALT
- SANDSTONE
- SHALE
- Cu COPPER
- SAND & GRAVEL
- STONE, CRUSHED/BROKEN

MAJOR LITH: A specific lithologic name for the most abundant rock type in a unit.

MINERAL RESOURCES DATA SYSTEM: This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

0 1.5 3 6 Miles

N

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6/10/09

MAP 5-10
PROBABLE GRAVEL DEPOSITS
Polk County Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY

BARRON COUNTY

STATE OF MINNESOTA

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

Soils Class

- IMPROBABLE
- PROBABLE

Source:
Natural Resources Conservation Service
(NRCS)
Soil Survey Geographic
(SSURGO) Database

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- HYDRO BODY

0 1.5 3 6 Miles

N

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MAP 5-11
PROBABLE SAND DEPOSITS

Polk County Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY BARRON COUNTY

STATE OF MINNESOTA

ST CROIX COUNTY

BARRON COUNTY

ST CROIX COUNTY

Soils Class

- IMPROBABLE
- PROBABLE

Source:
Natural Resources Conservation Service
(NRCS)
Soil Survey Geographic
(SSURGO) Database

- US HIGHWAY SHIELD
- STATE HIGHWAY SHIELD
- COUNTY ROAD SHIELD
- US HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD
- HYDRO BODY

0 1.5 3 6 Miles

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MAP 5-12
ENDANGERED RESOURCES
Polk County Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY BARRON COUNTY

STATE OF MINNESOTA

ST CROIX COUNTY

ST CROIX COUNTY

BARRON COUNTY

AQUATIC
TERRESTRIAL
AQUATIC & TERRESTRIAL
TOWNSHIP OCCURENCES

Endangered Resources Data Source:
Wisconsin Department of Natural Resources
Natural Heritage Inventory 10/01/2008

US HIGHWAY SHIELD
STATE HIGHWAY SHIELD
COUNTY ROAD SHIELD
US HIGHWAY
STATE HIGHWAY
COUNTY ROAD
SECTIONS

0 1.5 3 6 Miles

N

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MAP 5-13
ECOLOGICAL LANDSCAPES

Polk County
Wisconsin

State of Wisconsin

BURNETT COUNTY

BURNETT COUNTY BARRON COUNTY

BARRON COUNTY

ST CROIX COUNTY

ST CROIX COUNTY

LEGACY PLACE

AR Apple River
BS Balsam Branch Creek and Woodlands
BC Big Rock Creek
CR Clam River
DS Danbury to Sterling Corridor
LT Lower St. Croix River
SX St. Croix River
SR Straight River Channel
TA Trade River Wetlands
WP Western Prairie Habitat Restoration Area

US HIGHWAY
STATE HIGHWAY
COUNTY ROAD
HYDRO STREAM
HYDRO BODY
CITY/VILLAGE
TOWNSHIP

ECOLOGICAL LANDSCAPES

FOREST TRANSITION
NW LOWLANDS
NW SANDS
WESTERN PRAIRIE
LEGACY PLACE

0 1.5 3 6 Miles

N

Ecological Landscapes Source:
Wisconsin Department of Natural Resources

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