

## 2010 Water Quality Management Plan Update

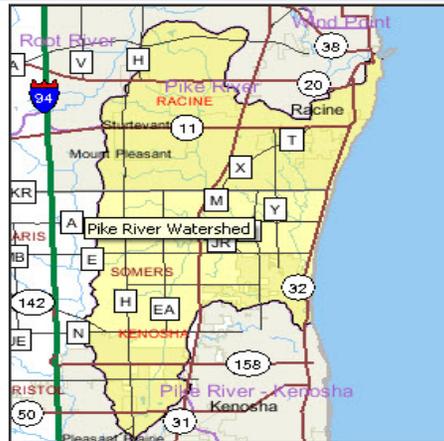
Southeast Basin, Wisconsin

August, 2010

The Pike River Basin is a 56 square mile area that lies on the eastern side of Kenosha and Racine Counties.

Approximately 52 square miles of land eventually drain into the Pike River, which discharges to Lake Michigan in the City of Kenosha at a point approximately one mile north of the City of Kenosha Harbor.

The remaining 4 square miles of land drain directly into Lake Michigan via swales, ditches, channels and stormsewer outlets.



Map 1: Pike River Watershed



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### Watershed Details

#### Population and Land Use

The Pike River watershed includes portions of the Cities of Kenosha and Racine; Town of Somers; and Villages of Elmwood Park, Mt Pleasant, Pleasant Prairie and Sturtevant (Table 1). Of these seven minor civil divisions, only the Village of Sturtevant lies entirely within the watershed boundaries. Civil divisions are an important factor in watershed based natural resource management since local units of government form a foundation for the public decision making framework within which environmental issues are addressed (SEWRPC 2007).

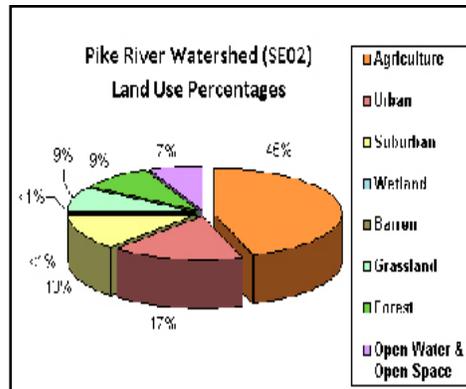


Figure 1: Land Use (2001)

The Pike River Watershed has been among the fastest growing regions in the State. The population almost doubled between 1950 and 1970, increasing from about 13,300 persons in 1950 to about 24,200 persons in 1970, and the Southeastern Wisconsin Regional Planning Commission (SEWRPC) forecasted a year 2000 population of approximately 56,300.(SEWRPC 1983) It is important to note that this estimate only considered people living on land draining into the Pike River system. It did not include the people who lived on land (primarily neighborhoods located in the southeastern corner of the City of Racine) draining directly into Lake Michigan. For planning purposes, the WDNR includes this direct drainage area in the Pike River Basin. The Pike River Watershed averages 988 persons per square mile. This density is much greater than the average for the State of Wisconsin which is 99 persons per square mile.

Land use refers to the primary ways people develop and manage the landscape. Today, the watershed contains a mix of land use types (Figure 1 and Appendix), but 170 years ago the Pike River Basin was essentially undeveloped. Native people lived in a landscape that was rich with upland forests of oak, hickory, walnut and box elder trees. The first European settlement in the Pike River watershed, the Village of Pike River, was developed in 1835 near the mouth of the Pike River one mile north of the present City of Kenosha Harbor. Pike River once had dwellings, stores, mechanics' shops, and warehouses. But during 1842 and the following year, many of the buildings were moved to Southport (present day City of Kenosha), and the Village ceased to exist. In addition to Southport, settlements near the Pike River watershed also included Root River, (Present day City of Racine). Settlement of these areas began in 1835 and 1834, respectively. It was not until the 1950s that significant urbanization began to occur within the rest of the watershed. (SEWRPC 1983)

Although the towns and villages within the Pike River Watershed have experienced high rates of residential growth during the last two decades, agriculture remains the dominant land use. Urban and suburban land uses represent the next two largest land use types but even combined do not cover as much landscape as farmland does. Next to agriculture, grasslands and forests respectively represent the two next most common rural land uses. Wetlands and barren land covers make up less than two percent of the land area in the basin.

### Pre-settlement/Historical Conditions

The Pike River watershed has changed a great deal in a very short time. One hundred and seventy years ago, before Kenosha and Racine Counties were settled, Southeast Wisconsin looked much different than it does today. Native people lived in a landscape that was rich with upland forests of oak, hickory, walnut and box elder trees. In addition to the forests, the area was water and wetland rich. The forests, rivers and Lake Michigan were catalysts for the first settlers' attempts at economic development in the region. The lands in and adjacent to the Pike River Watershed were likely among the earliest to be transformed.

The movement of European settlers into the watershed began after 1834. Not long before this, there had been three Native American Villages in or near what is now the City of Kenosha, but these were gone by 1834. The only roads were Native American trails, two of which were located approximately on the alignment of the present day STH 31 and STH 50. The first European settlement in the Pike River watershed, the Village of Pike River, occurred in 1835 near the mouth of the Pike River one mile north of the present harbor of Kenosha. Pike River once had dwellings, stores, mechanics' shops, and warehouses. But during 1842 and the following year, many of the buildings were moved to Southport (Present day City of Kenosha), and the Village ceased to exist. In addition to Southport, settlements near the Pike River watershed also included Root River, (Present day City of Racine). Settlement of these areas began in 1835 and 1834, respectively. It was not until the 1950s that significant urbanization began to occur within the rest of the watershed.

The Pike was probably one of the earliest rivers in Wisconsin to be dammed and ditched to facilitate drainage and sup-



Map 2. Municipalities in the Pike River Watershed

Table 1. Civil Divisions - Pike River Basin	
Civil Division	Basin Area (square miles)
<b>Racine County</b>	
City of Racine .....	00.57
Village of Elmwood Park .....	00.15
Village of Sturtevant .....	01.56
Village of Mt. Pleasant .....	19.24
<b>Kenosha County</b>	
City of Kenosha .....	2.03
Village of Pleasant Prairie .....	0.76
Town of Somers .....	1.55
<b>Total</b>	<b>51.54*</b>

Source: SEWRPC 1983 \*The basin area does not total 57 square miles because the 1983 SEWRPC plan did not include the land just east of the watershed that drains directly into Lake Michigan.

ply water for irrigation given its close proximity to growing settlements around the present day cities of Racine and Kenosha. Historic stream and shoreline modification are widespread occurrences throughout the watershed because it was once common practice for land to be cleared right up to the streambanks to harvest lumber and create cropland. Decades of floodplain development and increases in impervious surfaces (roads, rooftops, parking lots) in urbanized watershed like the Pike have led to historic stream channel lining, deepening, straightening and relocating to move stormwater off the land and downstream more swiftly. Although these practices are now regulated, the rules came too late for the Pike River Watershed where decades of agricultural and urban development have left their mark

## Hydrology

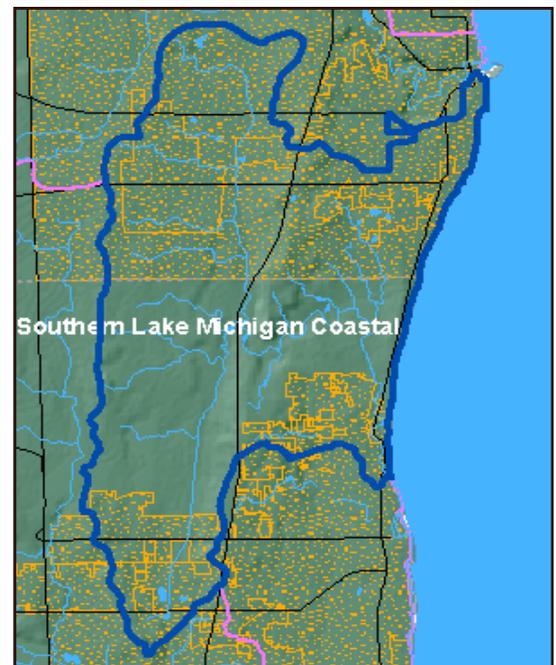
The river has two main tributaries, the North and South Branches. The North Branch originates in a residential area in the Town of Mt. Pleasant near the junction of County Highway C and 90th Street. From this point, the river flows easterly for about one mile before turning south. Several perennial and intermittent streams, including Waxdale Creek, join this branch before it enters Petrifying Springs Park in the Town of Somers in Kenosha County. In Petrifying Springs Park the river is joined by the South Branch. This watercourse is sometimes called Pike Creek but should not be confused with the Pike Creek that drains a separate watershed just to the south in the City of Kenosha. The South Branch of the Pike River originates as a drainage way near Highway 50 in Kenosha County. From there, it flows north along the Union Pacific Railroad, picking up contributions from agriculture drainage tiles and several tributaries including Airport Branch and Somers Branch. Approximately one-quarter mile downstream from the confluence of the North and South Branches, the Pike River flows into a three-acre impoundment located within Petrifying Springs County Park. The river's flow may be augmented by groundwater discharged from springs located within the impoundment. From Petrifying Springs County Park, the River flows generally easterly to within approximately one mile of the Lake Michigan shoreline, where it is joined from the north by Sorenson Creek, a major tributary. The river then flows southerly for about four miles until it discharges to Lake Michigan, approximately one mile north of the City of Kenosha Harbor. The Pike River acts as an estuary of Lake Michigan from its mouth to the lagoon located on the Carthage College Campus, a distance of about 1.4 miles.

## Ecological Landscapes

This watershed is located in the middle of the Southern Lake Michigan Coastal Ecological Landscape (Map 3), which is characterized by ridge and swale topography, clay bluffs, and lake plain along Lake Michigan. Silt-loam soils overlying loamy and clayey tills are typical.

The historic vegetation in the northern part of this Ecological Landscape was dominated by sugar maple-basswood-beech forests with some oak while the southern part was dominated by oak forest, oak savanna and prairies. Wet-mesic and lake plain prairies were common in this area. Black ash, relict cedar and tamarack swamps were also present.

Today, most of the area is dominated cash grain agriculture, vegetable crops and urban development. Only about 8% of the Ecological Landscape is forested. Maple-beech forests are about half of the remaining forest types with the remainder split equally between oak-hickory and lowland hardwood forest types. There are some areas of wet-mesic and wet prairie but only small preserves remain since the landscape is heavily disturbed and fragmented. Because of this isolation, fragmentation, and high level of disturbance, non-native plants are abundant.



Map 3: Ecological Landscapes

## Watershed History Note

The Pike River Watershed is located in both Kenosha and Racine counties, and within this watershed one can find the Hawthorn Hollow Nature Sanctuary and Arboretum, a 40-acre property which combines nature, history and horticulture.

One of the historical buildings located on the property is the original Pike River School, built in 1847. The schoolhouse was made by hand, from oak trees, that grew in the area. The logs were milled at the saw mill, on the river, in what is now known as Petrifying Springs Park. It was there that the trees were cut into boards and used in the construction of the schoolhouse's walls, doors and windows. The total cost of the schoolhouse in 1847 was \$200 and that included everything, including the glass for the windows. All the work was done by hand.



Pike River School, Built 1847. Photo Courtesy of the Hawthorne Hollow Sanctuary and Arboretum.

All 8-grades were taught by one teacher. During this time, the children did not know about football, and baseball had not been invented yet.

The teacher was called "Teacher", and not by her name. "Teacher" was a term of liking and respect. The teacher not only had to teach, she also had to be the janitor - sweep the floor and make the fire. In 1850, a teacher's salary was \$11.00 a month. During the noon recess children often roamed through the woods. The girls might pick wildflowers. The boys hunted Indian arrowheads or fished in a deep bend of the creek they called The Swimming Hole.

By 1905, this one room schoolhouse was too small. The 1847 one room schoolhouse was sold to a farmer who moved it to his nearby farm for storing grain. In 1967 the Hyslop Foundation paid \$500.00 for the 1847 Pike River School and moved it to Hawthorn Hollow to be preserved. When Hawthorn Hollow got the school, there were wires stretched under the ceiling with ears of corn drying on them, and the writing was still on the blackboard after sixty years.

## Watershed Condition

### Priority Issues

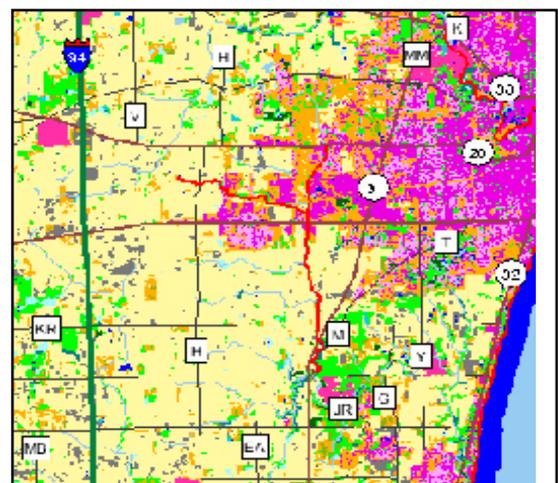
Water resources of the Root-Pike River Basin, and therefore the Pike River Watershed, are some of the most degraded in the State of Wisconsin. The majority of wetlands originally present have been drained or filled. Stream modifications like channel manipulation, relocation, and in some cases, enclosures have affected most of the streams in the basin. The combined effects of these modifications have led to degraded water and habitat quality throughout the watershed. The following are considered the priority issues:

- Hydrological modification (ditching)
- Urban runoff
- Stream bank erosion

### Water Quality Goals

Water quality goals for the watershed include:

- Minimizing agricultural runoff from rural areas
- Minimizing urban stormwater runoff
- Protecting groundwater resources
- Restoring wetlands for water quality improvement and protection
- Establishing riparian buffers to protect water quality
- Monitoring and controlling non-native invasive species
- Obtaining water quality and biological monitoring data to adequately assess water resource conditions
- Increasing citizens' watershed awareness, understanding and stewardship activities



Map 4. Land Use (WisLAND) and impaired waters

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## Overall Condition

The water quality of the 42 miles of rivers and streams in the Pike River Watershed ranges from severely degraded to good. Twenty-one miles of perennial streams (50%) are currently considered to support a Warm Water Sport Fish community. Eight miles (19%) support a Warm Water Forage Fish community. About eight miles (18%) of streams in the basin support a Limited Forage Fish community. Six miles of streams in the Pike River Watershed are listed on the states impaired waters (303(d) list. These streams are the North Branch of the Pike River and its tributary, Waxdale Creek, in the Town of Sturtevant.

Fish species found in the Pike River Watershed include yellow perch, southern redbelly dace, blacknose dace, bluegill, and largemouth bass. In addition, steelhead salmon, brown trout, and brook trout are present due to Lake Michigan stocking efforts. Tolerant fish species found in the watershed include the creek chub, fathead minnow, and green sunfish.

## Fish Consumption Advice

There are no specific advisories issued for waters in this watershed.

## Point and Nonpoint Sources

Nonpoint sources provide a tremendous load of sediment and nutrients to waters in this area. Forty-five (45%) of the watershed is in agricultural land uses. Urban nonpoint pollution is also a concern. Sediment from construction sites and the particles that accumulate on roads and parking lots wash into storm sewers or drainage swales where they contribute phosphorus to local waterways and cause low oxygen conditions. All of the communities in the watershed with the exception of Elmwood Park, hold WDNR Municipal Stormwater permits designed to reduce the nonpoint pollution that enters local waterways through their storm sewer system. Racine and Kenosha County, and the University of Wisconsin Parkside Campus are also covered under permits issued through this program. Waxdale Creek and the North Branch of the Pike River are listed as impaired due to nonpoint source problems.

## River and Stream Condition

The water quality of the 42 miles of rivers and streams in the Pike River Watershed ranges from severely degraded to good. Twenty-one miles of perennial streams (50%) are currently considered to support a Warm Water Sport Fish community. Eight miles (19%) support a Warm Water Forage Fish community. About eight miles (18%) of streams in the basin support a Limited Forage Fish community. Annual flows for the period 2000 to 2008 averaged 44 cubic feet per second (cfs) as recorded at USGS gauging station #04087257 located 9 miles upstream from the river's junction with Lake Michigan: <http://waterdata.usgs.gov/wi/nwis/rt>. Peak flows for the same period have exceeded 1500cfs on several occasions and minimum flows have dropped under 5cfs.

The watershed is characterized by small-to-medium sized warm water streams that exhibit flashy flow patterns. This means they run too high and fast when it rains and too low, slow and warm when the weather is dry. Stream sections are often steeply channelized and erosive with bank heights ranging from 9 to 22 feet (UWM 2005). These hydrologic problems are rooted in historic channel modifications and growing urban land use. The Pike River was ditched and straightened in the late 1800s to facilitate the drainage of farmland (SEWRPC 1983). Stream and shoreline modifications continued on streams throughout the watershed because it was common practice for land to be cleared right up to the streambanks to harvest lumber and create cropland (WDNR 1992). Decades of rural and urban development in the floodplain, compounded by increases in impervious surfaces (roads, rooftops, parking lots) outside the floodplain, have contributed to flooding problems throughout the watershed, and particularly in the North Branch.

### Total Suspended Solids

Total Suspended Solids (TSS) is a commonly used water quality indicator that measures the particles floating within a water sample. TSS does not measure heavy particles like sand that sink quickly, or compounds like chloride from de-icing applications that dissolve in water.

Streams and rivers always carry some suspended material, so a certain background level of TSS is expected. But waterways in the Pike River watershed generally carry too much TSS, especially following rain storms when dirt, bits of metal, and decomposing plant and animal material wash off the landscape.

Because particles sink, streams receiving large amounts of solids from runoff may not seem to have a problem if TSS is measured during dry weather conditions. Measurement of TSS during wet and dry weather conditions provide a more complete picture of stream conditions.

Both urban and rural land uses contribute TSS to the Pike River system but urban originating TSS is often much nastier from a water quality standpoint than rural originating TSS because urban TSS frequently includes a much higher percentage of potentially toxic materials that wash off impervious surfaces (roads, parking lots and roof tops).

Since the late 1990's the Mount Pleasant Drainage District #1 has been reconstructing approximately 5.5 miles of the North Branch Pike River in the Village of Mount Pleasant, Racine County. The goals of this project are to remove the threat of flooding from several structures and roads in the Village, and to improve water quality and fish habitat within the North Branch of the Pike River. Major elements include protecting wetlands, installing buffer strips along the river and establishing an environmental corridor.



The Pike River winds its way through Petrifying Springs Park in Kenosha County. Photo Courtesy of: <http://wis-parks.com/racine/racine.html>

Fish species found in the watershed include yellow perch, southern redbelly dace, blacknose dace, bluegill, and largemouth bass. In addition, steelhead salmon, brown, and brook trout are present due to Lake Michigan stocking efforts. Tolerant fish species found in the watershed include the creek chub, fathead minnow, and green sunfish. A list of fish species found in the North and South Branches of the Pike River system is included at the end of this document.

In 2005, the US Fish and Wildlife Service working with WDNR and several other public and private partners removed a 1950s era dam from the Pike River approximately four miles upstream from the river's Lake Michigan outlet. A four foot high concrete dam was replaced with a series of deep pools and shallow riffles and approximately 800 lineal feet of eroding streambank was stabilized. (USFWS 2009) Salmon and steelhead can now be found above the old dam site during their annual runs from Lake Michigan. The dam had provided a source of irrigation water for a golf course and this function was preserved with the new river pools.

### Lake Health

The one named lake found in this watershed is Petrified Springs Park Pond, which covers approximately three acres. There are several unnamed ponds and lakes covering 81 acres.

### Wetland Health

It is difficult to determine exactly how many acres of wetlands were in the Pike River Basin prior to European settlement. Initial state surveys conducted in the early 1800's estimated the entire state of Wisconsin contained approximately five million wetland acres. We now know these estimates were low by about 100 percent! There are many reasons for this discrepancy. The original surveyors of the state did not use similar interpretations of what were considered wetlands, nor were the survey methods used very accurate. More recently, soil scientists estimate that Wisconsin once contained 10 million acres of wetlands. This figure is based on much more accurate data from classifying wet soils (somewhat poorly, poorly and very poorly drained) as wetlands.

Based on evidence left behind in the soil, it's estimated that the Pike River Watershed once supported over 4,800 wetland acres prior to Euro-American settlement. Today, the watershed contains only 351 acres -- a 93 percent wetland loss!

#### Wetland Status

The Pike River Watershed is located in portions of Racine and Kenosha counties and consists of three sub-basins -- the Upper Pike, Pikes Creek, and the Pike River. Wetlands comprise 1% of the current land uses in the watershed. It is estimated that about 7% of the original wet-

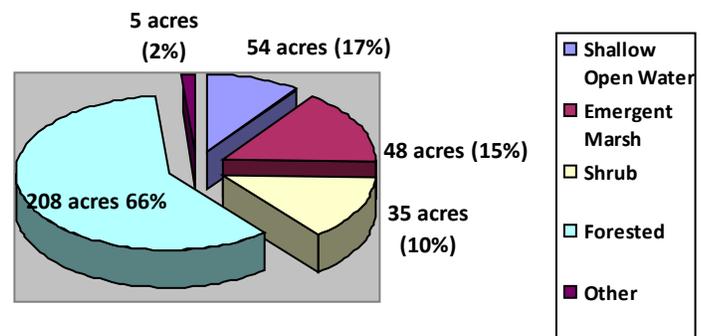


Figure 2. Wetland Types in the Pike River Watershed

lands in the watershed currently exist. Of these wetlands, forested wetlands (66%) and emergent wetlands (15%), which include marshes and wet meadows, dominate the landscape (Figure 2 (previous page)).

**Wetland Condition**

Little is known about the condition of the remaining wetlands but estimates of reed canary grass infestations, an opportunistic aquatic invasive wetland plant, into different wetland types has been estimated based on satellite imagery. This information shows that reed canary grass dominates 70% of the existing emergent wetlands, which includes wet meadows and marshes, and 15% of the remaining forested wetlands (Figure 3). Reed Canary Grass domination inhibits successful establishment of native wetland species.

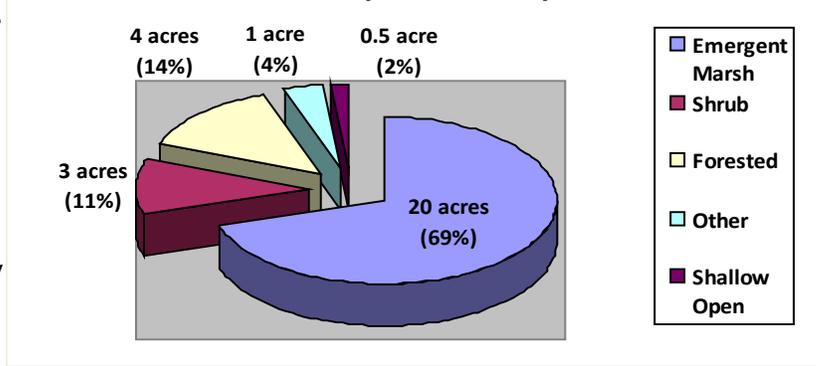


Figure 3: Portion of wetlands affected by Reed Canary Grass.

**Wetland Restorability**

Of the 4,493 acres of estimated lost wetlands in the watershed, approximately 34% are considered potentially restorable based on modeled data, including soil types, land use and land cover (Chris Smith, DNR, 2009).

**Groundwater**

Groundwater in this area is relatively well-understood. The resource has been analyzed through groundwater flow modeling by USGS and WGNHS with support from SEWRPC, WDNR, and other partners. This model evaluated groundwater quality and quantity in both the shallow and deep aquifers in this area. There are deep cones of depression in the deep aquifer both to the north and the south of this area. The cities of Racine and Kenosha obtain drinking water from Lake Michigan.

**Waters of Note:**

**Outstanding or Exceptional Waters (ORW/ERW)**

As of 2010, there are no outstanding or exceptional waters within the watershed.

**Trout Waters**

As of 2010, there are no trout waters identified within the watershed.

**Impaired Waters**

Just over eight miles of streams in the Pike River Watershed are considered impaired and not meeting water quality standards. These streams are the North Branch of the Pike River from its junction with the South Branch up river 5.23 miles to State Highway 20, and the entire 2.91 mile length of Waxdale Creek in the Town of Sturtevant.

The *North Branch of Pike Creek* is listed as impaired for Fish and Aquatic Life due to degraded habitat caused by stream channelization, debrising of streambanks, draining of wetlands, sedimentation from runoff and increased stormwater drainage due to expanding development within the watershed. Fish kills attributed to potential chlorine discharge to Waxdale Creek also affected the North Branch Pike River downstream from confluence with Waxdale Creek; however, no fish kills have been documented on the North Branch Pike River since 1990.

*Waxdale Creek* is listed for Fish and Aquatic Life with sediment as pollutant and degraded habitat as impairment. The stream experienced a one-time fish kill in 1983 where 14,000 fish were documented killed. The kill was attributed to a spill from a point source discharging to the creek. The exact agent causing the kill was not specifically determined, but the toxicity was acute, and not chronic. No other fish kill documents were found. A stream classification survey in 1993 noted chronic water quality problems and habitat problems from nonpoint source runoff.

Two additional areas are on the impaired waters list. *Pennyroyal Park Beach* and *Alford Park Beach* (L.Michigan) are both listed as impaired for Recreational Uses due to elevated e.Coli values.

## Watershed Actions

### Projects and Grants

NPS Grant - Urban Nonpoint - Stormwater Construction North Branch Pike River 01/01/2004 -- Complete  
Village Of Mount Pleasant: Pike River Shoreline - Phase II to cost-share at 50% construction of Phase II of the Pike River shoreline rehabilitation.

One major project that affects the Pike River Watershed involves the Mount Pleasant Drainage District #1. The District was issued a permit from the WDNR to reconstruct approximately 5.5 miles of the Pike River in the Town of Mount Pleasant, Racine County. The goals of this project are to remove the threat of flooding from several structures and roads in the township, and to improve water quality and fish habitat within the Upper Pike River. Elements of the project include protecting wetlands, installing buffer strips along the river and establishing an environmental corridor. Construction began in 2002 and is estimated to take a minimum of 10 years to complete at a cost exceeding \$17,000,000.

### Monitoring

In addition to various ongoing DNR monitoring efforts, Dr. Tim Ehlinger from the University of Wisconsin - Milwaukee has conducted biological, water quality and habitat monitoring of the Pike River since 2000 (UWM 2009). His work has focused on the effects of flood control and habitat improvement effort in the North Branch.

WDNR Fisheries monitoring includes a variety fieldwork to gain specific knowledge related to Wisconsin's fish communities. The following waters have been evaluated for fish community: North Branch Pike River, Pike River, South Branch Pike River. The inset box on the following page contains a list of species found in the Pike River.

#### Aquatic Invasives Species (AIS):

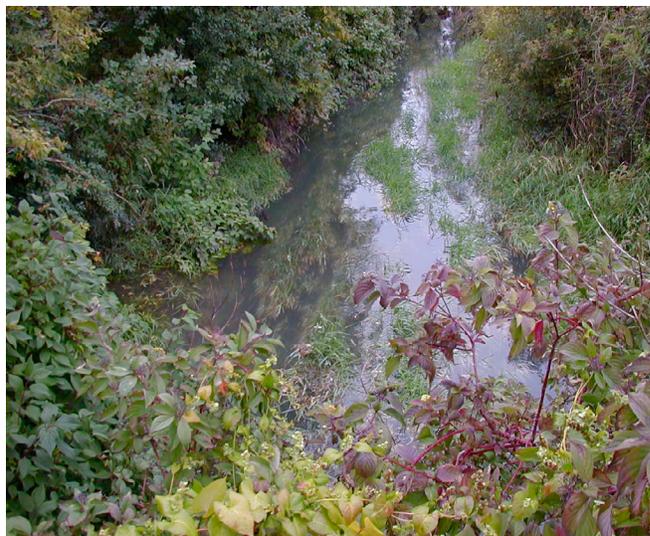
In close cooperation with UW Extension and Wisconsin Sea Grant, education efforts focus on teaching boaters, anglers, and other water users how to prevent transporting aquatic invasive species when moving their boats. Additional initiatives include monitoring and control programs.

Citizen Based Stream Monitoring (CBSM) Water Action Volunteer Program 02/09/2009 - Active  
Monitoring to collect various field parameters, including continuous data.

- North Branch Pike River 04/15/2006 Active
- Pike River Downstream of Campus Drive 06/27/2008 Active
- Pike River at USGS Station, UW Parkside 04/15/2006 Active

#### Pringle Nature Center and UW Parkside- Ephemeral Ponds Monitoring

In 2006, as part of the Wisconsin Ephemeral Pond Project (WEPP), the Wisconsin Department of Natural Resources and the Southeastern Wisconsin Regional Planning Commission began intensive mapping to update the digital Wisconsin Wetland Inventory in southeast Wisconsin. Improved mapping methods, applied to recent high-resolution digital imagery, allow the new maps to identify previously unmapped wetlands including ephemeral ponds. WEPP began monitoring selected ephemeral ponds to characterize the variety of types, their ecological significance, and to develop



Pike River Downstream of HWY 11. Photo by Craig Helker, WDNR.

guidelines for protection and restoration. This project builds on initial mapping efforts, involving citizens in the inventory and monitoring process. This project is being piloted in 2008 in Southeastern Wisconsin's coastal counties.

Watershed Rotation Sites - 06/03/2000 Active  
Stream water quality monitoring covering primarily biological, chemical, and habitat related monitoring to determine ambient conditions at "pour point" locations for each of state's 330 watersheds.

## Recommendations

Numerous resource management activities are identified below for the Pike River Watershed.

Overall Pike River Watershed:

- Conduct baseline surveys on all tributary streams.
- Evaluate and implement wetland restoration projects where practicable.
- Evaluate and implement aquatic habitat restoration and water quality improvement practices where applicable.
- Continue support of Storm Water Best Management Practice.
- Enhance and promote recreational fishing access.

South Branch Pike River:

- Working with partners, initiate buffer installation and/or enhancement on all tributaries and drainage ways.
- Create bench and meanders where possible.

North Branch Pike River Suggestions:

- Support continuation of Pike River project.
- Encourage additional fishing access.
- Working with partners, initiate buffer installation and/or enhancement on all tributaries and drainage ways.
- Support improvements to Waxdale Creek..

Main Stem Pike River Suggestions

- Pursue installation of toe protection on bluff adjacent to river at UW-Parkside.
- Pursue bank stabilization and floodplain access where practicable
- Support and encourage removal at Petrifying Springs Dam.

## North Branch Pike River Restoration Project

In 1997, in response to historic flooding issues, the WDNR issued a Chapter 30 permit to the Mount Pleasant Storm Water Drainage District for the reconstruction and restoration of approximately 5.5 miles of the Pike River in the Village of Mount Pleasant.

Key elements of the project included:

Comprehensive storm water and non-point source storm water management measures to reduce peak flows and maintain base flow.

Construction of multiple wetland systems.

Widening of the floodplain to allow more frequent overbank events, serving to dissipate peak energy flood flows.

Designing and placing in-stream habitat structures to increase fish community diversity.

Land acquisition to expand the functioning environmental corridor.

Implementing a monitoring plan for habitat, invertebrates, and fish to evaluate the success of the project and guide modifications as necessary.

To date, the Pike River Restoration Project has significantly increased flood storage, expanded the existing environmental corridor, improved water quality and aquatic habitat, restored and increased wetlands, and provided a recreational trail system.

The Village of Mount Pleasant intends to continue the restoration of the planned 5.5 miles of the Pike River, constructing Phase 5 (of a total of nine planned phases) in 2010.

Key elements will include floodway improvements, low-flow channel improvements and in-stream habitat expansion, construction of a storm water pond, and expansion of the Mt. Pleasant recreation trail.

*Fish Species Found in the Pike River Watershed:*

Bigmouth Shiner  
Black Bullhead  
Black Crappie  
Blacknose Dace  
Blacknose Shiner  
Bluegill  
Bluntnose Minnow  
Brook Stickleback  
Brook Trout  
Brown Bullhead  
Central Mudminnow  
Coho Salmon  
Common Carp  
Common Shiner  
Creek Chub  
Fathead Minnow  
Gizzard Shad  
Golden Shiner  
Goldfish  
Green Sunfish  
Green-Bluegill Hybrid  
Green-Pumpkinseed Hybrid  
Largemouth Bass  
Pumpkinseed  
Rainbow Trout  
Southern Redbelly Dace  
Sand Shiner  
Sunfish Hybrid  
White Sucker  
Yellow Bullhead  
Yellow Perch

Fish species caught during sampling in the North and South Branches of the Pike River from 1990-2008. Source: UW-Milwaukee 2009



Before Restoration, Kenosha County Club Dam



After Restoration, Kenosha County Club Dam

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- Lisa Helmuth, Water Resources Specialist
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- Mark Binder, GIS Analyst
- Additional Staff in the Pike Basin



Photo courtesy of Rick Reinders

## References

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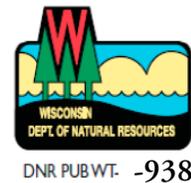
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Wisconsin DNR's mission involves preserving, protecting, and restoring natural resources. Watershed Planning provides a strategic review of water condition to enhance awareness, partnership outreach, and the quality of natural resource management.

# Pike River Watershed