

WATER RESOURCES

Water is truly a defining characteristic of Kent today and has played a role in its economy since the town's earliest existence. Within Kent's boundaries are three lakes, three rivers and three water-related state parks. There are 16 named ponds and numerous smaller farm ponds and beaver impoundments, large areas of floodplains adjacent to rivers, scores of streams and brooks, vernal pools, even a canal, and thousands of acres of soils defined as wetlands. These bodies of water and watered lands, as well as the aquifers that lie beneath them, are vital natural resources and each has a different function in the ecosystem.

The importance of water resources is expressed in the preamble to the Federal Clean Water Act (Chapter 440, Sec. 22a-36 to 22a-45): "The wetlands and watercourses are ... essential to an adequate supply of surface and underground water; to hydrological stability and control of flooding and erosion; to the recharging and purification of groundwater; and to the existence of many forms of animal, aquatic and plant life." Wetlands and watercourses are sites for numerous recreational activities, educational opportunities, and beautiful scenery, providing emotional and spiritual human benefit.

In accordance with Connecticut state law, the Kent Inland Wetlands Commission regulates activities within, or impacting, watered areas. Close to one half of the wetlands in existence at the time of European settlement are believed to have been lost to land development. On a positive note, the Connecticut Council on Environmental Quality stated in 2006 that conservation of inland wetlands has improved throughout the state with current new disturbances remaining at less than .01% per year. Still, we will need to plan for a net gain of wetlands if we are to support the functions and values most needed by human and wildlife communities.

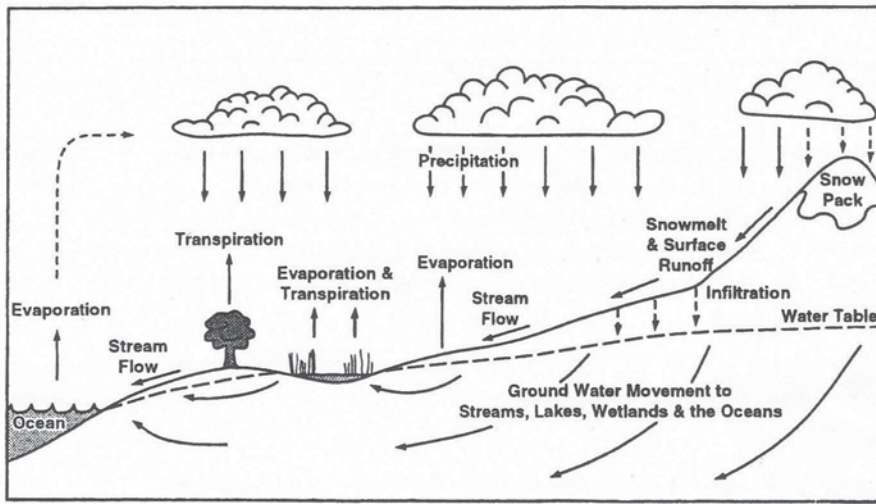
A Primer on Groundwater

The earth's water belongs to the so-called "hydrological cycle," the continuous and complex transfer of water through its gaseous, liquid and solid states. As the simplified diagram on pg. 27 shows, it is essentially a closed-loop phenomenon: water evaporates from the oceans into the atmosphere to form clouds, which are visible masses of water particles; these are transported by winds to land masses where the air condenses and falls back to earth as precipitation.

Groundwater forms the subsurface portion of the hydrological cycle and is found beneath the earth's ground surface, filling the cracks, crevices and pores of rock formations and surficial materials. Nearly all groundwater comes originally from rain and snow, though the time delay between precipitation and withdrawal from the collection point may be years. Kent receives an average of 48 inches of precipitation each year, with monthly distribution being fairly even throughout. Most precipitation evaporates or runs off the land into streams and rivers. Slope of the land, type of soil, type of geological formation (rock) and vegetation all influence the amount of groundwater that collects and goes into storage for gradual release during drier periods.

Transient weather conditions—heavy downpours on already saturated soil—also affect the surface's ability to absorb water. An increasingly significant influence is man-made: as Kent adds more paved roads, more structures, and other kinds of impermeable and semi-permeable surfaces to the landscape, the percentage of run-off water channeled directly to streams and rivers increases, and the amount of precipitation that infiltrates the soil declines. Currently, an estimated 15 to 20% of precipitation stays around long enough to soak in and become groundwater, a process termed recharging, but this percentage may decrease in the future.

As water percolates downward through the soil and through the stratified drift it finally stops when it meets nonporous bedrock, or in some instances, impermeable clay. The zone in which all pores and crevices are filled with



THE HYDROLOGIC CYCLE

replenished almost daily by early morning dew and/or precipitation, to make it favorable to setting roots and supporting plants. Topsoil rich in biomass (roots, worms, nematodes, etc.) promotes infiltration, and aboveground vegetation also works to reduce runoff.

Aquifers, A Fragile Resource

Aquifers are groundwater reservoirs. They are geological formations or deposits capable of storing and yielding large reserves of potable groundwater and are critical resources for public water supply. Aquifers exist at varying depths, and may extend for miles or be confined to areas of only a few hundred feet. Most ground water is on the move, traveling often very slowly towards a river valley, lake, wetland, or coastline, so that where it collects and where it comes to the surface via a well, a spring, a river or a lake, may be many miles apart.

Two types of aquifers are widely recognized—stratified drift aquifers and bedrock aquifers. Stratified drift aquifers provide most of Connecticut’s municipal water supply. Unevenly distributed within the state, they are the primary sources of ground water withdrawals for public supply, including in Kent. A stratified drift aquifer is typically an unconsolidated, layered deposit of gravel, sand, silt and clay laid down thousands of years ago by glacial meltwaters. The coarser sediments yield the most water. Kent’s aquifers are found in coarse-grained late glacial stratified-drift deposits. They have been identified through geological analysis along the Housatonic River, especially north of the Flanders area on the east bank of the river. Other locations include the Macedonia Brook floodplain, Cobble Brook floodplain, the South Kent Rd. valley, and along Womenshenuk Brook (see Water Resources Map #8). Smaller and very scattered reserves of groundwater also exist throughout Kent’s bedrock.

None has been fully surveyed on the ground by the state DEP or by Aquarion, but geologists with the U.S. Geological Survey estimated some years ago that the untapped North Kent aquifer had a three million gallon capacity. Its water quality today is unknown but inasmuch as parts of it lie under a former town dump site it may be compromised by dump leachate.

An estimated 820 people in the Kent Village District—nearly a third of the town’s permanent population, as well as several businesses including The Kent—are currently dependent upon the municipal water supply pumped and distributed by the Aquarion Water Company. The aquifer lies near the junction of Rte. 341 East and Cobble Rd. While Kent users are currently drawing an estimated 110,000 gallons per day from this aquifer, the aquifer’s actual capacity is unknown; some sources estimate that it is in the millions of gallons. That makes the Cobble Rd. aquifer a natural resource of the highest importance.

Under Kent’s Zoning regulations a measure of protection is afforded to aquifers by Section 11, Housatonic River District, and Section 13, Aquifer Protection Zone, which was added in 1980. Together these regulations provide additional safeguards through overlay districts that include the Housatonic River Valley from the stream belt to the top of the valley ridge. Some land uses within these overlay districts require a special permit from the P&Z and are subject to additional performance standards regarding pollution, erosion, and flood control.

water is called the “saturated zone”; the top surface of this saturation is termed the ground water table, which fluctuates some from season to season, from year to year. In areas adjacent to wells it also fluctuates in response to the demands put upon it by human activities.

Above the water table is the so-called unsaturated zone or zone of aeration. Here, larger pores are filled with air and smaller pores with water. A thin skin of soil moisture near the top of the unsaturated zone, held by organic material and fine-grained particles, is

Since the passage of the 1972 Federal Clean Water Act, most water pollution control efforts have focused on point-source pollution. Typically, this relates to regulating wastewater discharges and chemical spills at industrial and large-scale farm facilities; municipal sewage treatment plants and landfills; and commercial establishments such as gas stations, restaurants and food processing plants. Identified point sources of pollution are shown on Map #8, Water Resources.

More recently, concern has turned to monitoring and reducing non-point pollution sources (NPS), which are indirect and diffuse causes of groundwater pollution, and represent a greater threat in small towns such as Kent than do point-source pollutants. NPS is found in stormwater runoff from salted driveways and town roads, in the vicinity of heavily fertilized and pest-controlled lawns, around construction sites and farm activities involving heavy equipment and toxic materials, and downhill from failing septic systems, especially after heavy storms, to name the most obvious causes. It is also traced to the casual dumping of used motor oil and household chemicals in backyards.

NPS pollution is not just a local problem but a regional one, given the interconnectedness of groundwater and aquifers. Every town, Kent included, must rely for aquifer protection on increasingly stringent state and Federal regulation and monitoring under the 1987 Clean Water Act Amendments. Local efforts to educate the public in responsible disposal of waste materials of all kinds are also very important.

In 2004 the State of Connecticut created the Aquifer Protection Program (CT General Statutes 22a-354i Sections 1-10). It focused initially on protection of some 122 active well fields serving more than 1,000 people each. The state required that studies including test borings, seismic profiles and computer modeling be undertaken at these locations. They also ordered that certain land use activities within designated boundaries be regulated or, where there were already pre-existing high-risk uses in place that a set of best practices be followed in the future. Research, enforcement, standards and classifications, public education and a host of other measures were included in the enabling legislation.

In our area, parts of New Milford, Bethel, Danbury and Newtown fall under the Aquifer Protection Program, with responsibilities shared by the state DEP, the designated municipalities and the water companies that serve them. Kent, like many other small towns in the state, still has no extensive state regulation and lacks data as to the size and potential utility of both its municipal well aquifer and of other aquifers that exist in town.

The Kent Water Company

In the first years after Kent's center moved to its current location, houses there depended upon dug wells and hillside springs for water. One early village well was on the hillside above Maple Street Ext. and was shared by a milk factory, the railroad line and several other large establishments in town. Another well was on the hill behind Kent's modern shopping center. The pressure at this wellhead was great enough that a one-inch feeder pipe was able to carry water all the way to the old Hopson, Kissam and Tebbetts places near the site of the current Fife 'n Drum restaurant.

By 1881, however, more water was needed and a group of Kent leaders formed the Kent Water Company. The water company built a reservoir with a reported 3,000,000 gallon storage capacity up on Segar Mountain to store runoff from the abundant springs and stream on the hillside. They laid a network of cast iron pipes to deliver a reliable water supply to the village, some 168 feet below. Some of these pipes are rumored to be in service still. Abundant water led to the formation of Kent's first volunteer fire-fighting association and the installation of fire hydrants at critical points.

Several decades later the Kent Water Company put in its first well, drilling down 30 feet into gravel in land that is near the junction of South Kent Rd. and Rte. 341. Well #1 remained in service until the 1955 flood when it was rendered unfit for human consumption, principally as the result of leachate from the nearby state salt/sand pile, which in those days lay open to the weather. To this day the site of Well #1 is indicated on DEP maps, as well as Map #8) as one of two active and two inactive leachate and wastewater contamination sites in Kent. (Another source of contamination was later found to be the now-defunct manufacturing business known as Berkshire Transformer.)

A second artesian well was then sunk alongside the Kent Water Company's reservoir on the south side of Rte. 341 just below the junction with Cobble Rd. When Guy Mankin purchased the Water Company in the 1930s he installed three 100,000-gallon tanks near the reservoir to increase water pressure in town.

Well #3 was machine-dug 29 feet down into the stratified drift aquifer along Cobble Brook in 1979 and remains in use. On June 1, 1995, The Kent Water Company was sold to the public utility Bridgeport Hydraulic Company,

subsequently renamed BHC, and still later Aquarion Water Company. Aquarion took the old reservoir off line and intentionally breached the dam holding its surface water after determining that it was not up to modern water management standards. (For years customers had complained of the taste, color and turbidity of the water which, despite being filtered, was known to deliver the occasional critter along with the flow.)

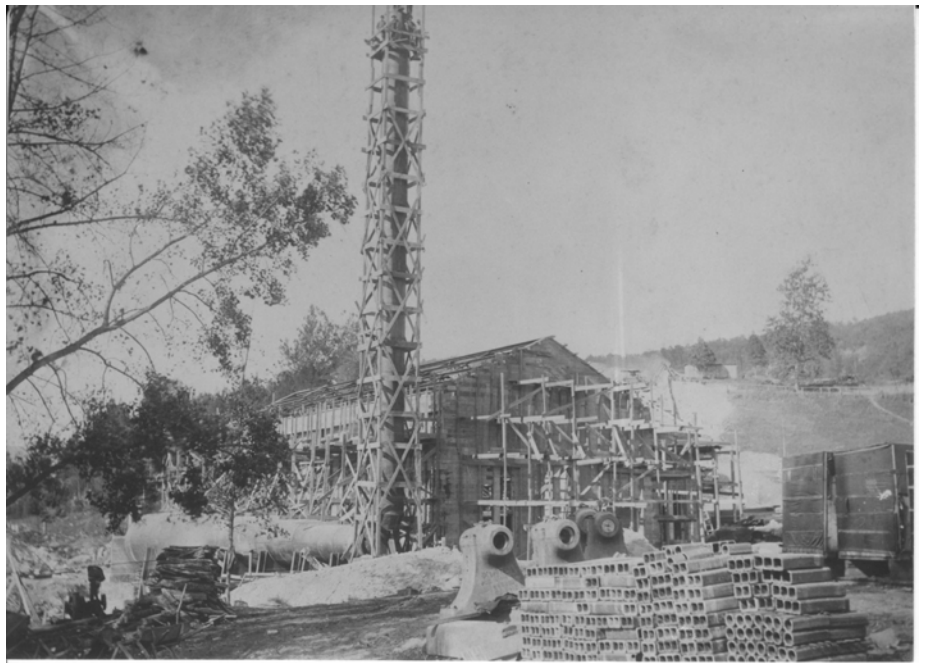
According to Aquarion's current data, the present aquifer (Well #3) supplies an average of 263 gallons of treated water per day per user, at an average cost in 2005 of \$1.30 per day. Water usage in Kent would appear to be close to the national average, 75 gallons of water per day or 300 gallons for a family of four.

Private Wells

Groundwater is tapped in smaller quantities through private wells. In Kent, virtually all water accessed by residences and businesses lying outside the Village District, including large institutions such as Kent School, Marvelwood School, South Kent School, Kent Greenhouse, and the Bull's Bridge Golf Course, depend upon private wells.

A few dug wells remain from earlier times. Historically, they were excavated by hand at locations where the water table was reasonably close to the surface. When incoming water exceeded the digger's bailing rate, digging stopped. Water was raised to the surface with a pump or bucket. The well hole was usually large enough in diameter for a man to stand in while he dug and lacked continuous casing, making it subject to contamination from nearby sources such as farmyards. Dug wells also tended to go dry during periods of drought when the water table dropped.

Today, the majority of wells are drilled deep into consolidated bedrock. Well-drilling is a regulated activity monitored by the Torrington Area Health District. Drilling must be done by a state-licensed operator using either a rotary drill or a percussion drill. In Kent the average depth for drilled residential wells is between 250 and 400 feet, though depths of up to 880 feet are recorded. Typically, a submersible electric well pump is suspended in the well shaft, bringing the water to a level just below the frost line and carrying it into the structure where additional pressure may be applied to lift it to every fixture in the house.



Bull's Bridge Power Plant - 1910

Yields from bedrock-floored wells in the Upper Housatonic River basin vary tremendously from one location to another, as supply is largely controlled by the number and size of water-bearing fractures encountered by the well. Any well producing over five gallons a minute is considered a good well, though many larger households these days require considerably higher rates to meet their needs. For those fortunate enough to drill in a stratified drift aquifer, the pressure and the flow can be extremely high—over 250 gallons a minute in one reported case.

The process of finding water-bearing seams or fractures in bedrock sometimes appears to be mystical, but an experienced well-driller is able to read with some accuracy “the lay of the land,” which makes locating wells more scientific than it may appear to the untrained eye. Nonetheless, surprises are part of the business. One Kent resident reports having one well 150 feet deep that regularly yields 45 gallons per minute and a second well, only a hundred feet distant, that produces just six gallons.

Water from deep bedrock wells in Kent is typically free of man-made contaminants. “Pure” water can, however, have other problems, such as hardness, or it can have a metallic taste or an unpleasant smell. These qualities, which can be removed with filters and softeners, are generally associated with an abundance of dissolved calcium and/or iron and

magnesium found in minerals in the bedrock.

Not surprisingly, the abundant iron ore deposits found in Kent give rise to significant mineralization of its water in many locations. A few households near the old iron ore beds in South Kent, for example, must resort to filtration systems just to remove the almost greasy rust particles that rise abundantly with the well water, especially after heavy saturating rainfalls. Fortunately, the water is in every other way of high quality. The Connecticut DEP urges individual well owners to inspect their wells periodically, looking for breaks in surface caps and casings, protecting the area around wellheads from surface runoff, avoiding the use of pesticides, herbicides, fuels and other hazardous materials in the vicinity of wellheads, and engaging a professional to certify water quality every few years.

Water Quality Standards

Groundwater quality is classified according to its suitability for drinking and other purposes. Existing or potential public water supplies suitable for use without treatment are designated Groundwater AA or GAA. GA defines existing private and potential public supplies suitable for drinking without treatment. GB designates water not suitable for human consumption without treatment, though acceptable for industrial processes and cooling. GC is unacceptable.

Groundwater beneath the old North Kent landfills currently does not meet consumption standards. However, groundwater in most of Kent is of good quality, suitable for consumption without chemical and biological treatment. Kent’s municipal aquifer is rated by the state as GAA. Like well water all over the state, trace amounts of radon, a radioactive gas found naturally underground—as well as trace amounts of copper, lead and arsenic—do occur in the Kent aquifer as they do in local residential bedrock wells. In every case the levels are considered to be fully within health safety standards. Greater risk of water contamination lies in the household plumbing systems found in many older houses in Kent: lead soldering at joints and corroding copper pipes contribute detectable amounts of metal residues to tap water.

Inland surface water quality is classified similarly. AA is the designation for potable (suitable for drinking) water, fish and wildlife habitat, recreational use and agricultural use, within an existing or potential water supply watershed. AA covers the lakes, ponds, and streams in the West Aspetuck River watershed. Class A surface water is similar to AA water in quality but is found outside water supply watersheds and covers most of the remainder of Kent water. Exceptions are the waters of the Housatonic River, Ten Mile River, and Lake Waramaug, which are all impaired to some degree

A Surfeit of Springs

A spring is a place where groundwater reaches the surface as a measurable flow of water. Most springs discharge water where the groundwater table intersects the land surface. Springs may also flow out along fractures or faults that come to

Water quality tables

Groundwater quality classes (see Water Resources map):

GAA Existing or potential public drinking water supply. Water suitable for consumption. In Kent the West Aspetuck River watershed and several public wells fall in this category.

GA Existing private water supply and potential public water supply; suitable for consumption. This class covers most of Kent.

GB to GA Groundwater currently not suited for consumption without treatment due to pollution. Goal is to restore the water quality. This applies to the old North Kent landfill and the area near the Sloane-Stanley museum.

GB Groundwater within urbanized or industrial areas; not suitable for human consumption. This class is not present in Kent.

Surface water quality classes (see Water Resources map):

AA Water suitable for drinking water supply, fish and wildlife habitat, recreational use, agricultural use, a.o.; within an existing or potential public water supply watershed. This class covers the lakes, ponds and streams in the West Aspetuck River watershed.

A As above, but outside water supply watersheds. This covers most of Kent’s waters.

B Water suitable for fish and wildlife habitat, recreational, agricultural and industrial use, a.o. The Ten Mile River falls in this class.

C One or more uses or quality criteria impaired.

D Present conditions severely inhibit or preclude one or more uses.

B,C,D to A Water currently impaired for one or more uses, but the state’s goal is to improve the quality to A. Lake Waramaug is in this class.

C,D to B Presently not meeting water quality criteria or impaired for one or more uses due to pollution; the goal is to improve to class B. The Housatonic River falls in this category, due to PCB pollution. There is currently still a warning in effect not to eat fish caught in the river.

From: Connecticut Resources Atlas Series Water Quality Classifications Map of Connecticut. Compiled by James Murphy, CT Department of Environmental Protection. 1987.

the surface. The Kent landscape is dotted with springs. Many contribute to ponds and lakes that are otherwise dependent for their water supply on intermittent streams. South Spectacle Lake and Fuller Pond are spring fed.

Some springs are intermittent; others run continuously but are so subtle in their action as to reveal their presence only in winter when their constant seepage maintains a patch of open water along the edge of an otherwise frozen pond or lake. Springs are often a source of problems for houses built on hillsides. As more and more construction is taking place in hilly terrain, the hillside earth and its existing seepage points are being disturbed. Land use officers and land owners will need to be vigilant in devising environmentally sound ways of cohabiting with springs that can otherwise undermine foundations or make basements permanently wet.

Watersheds

A watershed is the catchment or drainage area above a body of water. All the runoff and infiltration within that area flows downward following the terrain until it reaches the water body at the base of the watershed. Rain, snowmelt, rivulets, springs, and streams thus travel from higher to lower elevations to join in a single river system flowing toward the sea. Watershed boundaries often follow an irregular course, but are easily discerned on topographical maps by the crests of surrounding ridges. The Continental Divide, running from Canada down through a series of western states, represents the grandest “parting of the waters” in North America, but there are countless smaller watersheds throughout the land. Indeed, within each river watershed are multiple smaller watersheds that determine the route by which smaller bodies of water will flow. Changes



in the watershed terrain or vegetation, due to logging, the introduction of impervious surfaces such as paved roads, driveways and structures and various farming practices can affect the performance of the watershed. A predominance of forested land is generally considered a prime factor in keeping a watershed healthy, clean and relatively free of pollutants.

The whole of Kent is part of the vast Housatonic River watershed, which drains into Long Island Sound at its southern terminus. Within Kent’s boundaries are parts of 11 subregional basins that feed into the larger watershed, either directly or via the Aspetuck or Ten Mile Rivers.

The Role of Wetlands and Vernal Pools in Conservation

Inland wetlands are lands where the water table is near, at, or above the soil surface for a significant part of the year. Wetlands can be found in valleys and depressions, including upland depressions without outlets, along rivers in areas where there is little vertical descent, and in uplands where natural drainage is impeded due to glacial clay deposits or by impermeable subsoil or bedrock. Wetlands contain vegetation and other forms of life that are specifically adapted to life there.

As many wetlands are not well suited to most kinds of farming, to raising livestock or to carrying on industrial activities, they were long regarded as useless. Landowners consequently drained, filled, dredged or dammed them with impunity. Nowadays, however, wetlands are recognized as a vital part of the broader ecosystem, and protected by a host of federal, state and local regulations designed to keep them undisturbed and in some cases to restore what has been lost.

Among the environmental purposes wetlands serve, one of the most important is the absorption of excess and runoff water. Wetlands act as “sponges” on the landscape. After heavy rains or during ice melts, wetlands capture and slowly release an enormous amount of runoff that would otherwise flood and erode higher dry ground. Wetlands also cleanse runoff of much of the silt and salt and other contaminants that fast-moving waters gather, allowing these materials to sink into the wetlands bottom or to be absorbed by the vegetation before the water itself percolates down to recharge

groundwater supplies. Wetlands are among the richest ecosystems in terms of diverse vegetation and wildlife. For more details on wetlands and their legal definitions in Connecticut see Soils, Chapter Three.

The major wetlands areas in Kent are in Kent Hollow, on Skiff Mountain, and in the lands surrounding the two Spectacle Lakes. Two other large areas are found in South Kent: the Leonard/Hatch/Mill ponds complex and the Mud Pond areas on the Kent-New Milford boundary along Camps Flat Rd. The type of wetlands known as calcareous is of particular note. Associated with limestone bedrock and alkaline soils, calcareous wetlands are found on the marble substrates of the Housatonic and Womenshenuk valleys and in the Kent Hollow area.

Vernal pools are seasonal wetlands containing standing water. Some vernal pools are hardly larger than big puddles, others hundreds of feet across in size. They tend to form in natural depressions that fill up with water from rain, snowmelt, high water tables and/or runoff associated with spring and fall rains, and often disappear in summer due to evaporation and the lack of replenishing rainfall. Their ephemeral nature prevents fish populations from developing and this creates a rich and unique environment in which a variety of amphibians (typically hatched in water but maturing into lung-breathing land species such as frogs and salamanders) can breed and feed seasonally.

Vernal pools are also essential habitat for migratory birds, turtles, snakes and other creatures. The Connecticut General Assembly passed legislation in 1995 (PA 95-313) that gave municipal inland wetlands agencies explicit regulatory authority over vernal and other intermittent watercourses. For a more extensive report on the ecological importance of vernal pools see Chapter Nine, Critical Habitats and Wildlife.

Lakes and Ponds

Limnology, the study of inland waters, uses the term “lentic waters” to describe bodies of water that are essentially stationary. In popular usage, however, we call them lakes and ponds. Though the choice is somewhat arbitrary, lakes tend to be larger and/or deeper than ponds which means that lakes often have thermal stratification (distinct layers of warmer and colder temperatures that can be detected particularly during summer months). The layering also affects the kind of fish populations that can live there.

Ponds, on the other hand, tend to be shallower and without thermal stratification; in shallow areas where sunlight is able to penetrate to the bottom, ponds often support an abundance of rooted plant growth. Lentic waters, be they lakes or ponds, will fill in over geologic time, evolving ultimately into wetlands unless artificial means are employed to keep them open.

Among Kent’s more notable lakes:

South Spectacle Lake is 85 acres in extent and has a 1,000-foot-long public right-of-way through private land accessible from Rte. 341. Its watershed is estimated to be 349 acres and its waters are primarily spring fed. South Spectacle’s maximum depth is 41 feet and its mean depth is 19 feet. Perhaps because it is accessible to boats from other areas, South Spectacle is seriously invaded with Eurasian milfoil, as well as floating mats of white and yellow lilies. It has a water quality rating of AA. The State Inland Fisheries Department lists largemouth bass, yellow perch and sunfish as living in the lake. An old camp along the southeast side of the lake has been replaced by a number of large residences. The north shore is dominated by wetlands.

North Spectacle Lake is located north of Davis Rd. and Rte. 341. It has a surface area of 130 acres. A bathymetric survey carried out by the Connecticut DEP in 1956 reported a maximum depth of 33 feet in some areas and a mean depth of 14 feet overall. More recent studies completed in 2007 found that the depth had decreased considerably, to 26 feet because of siltation.

It lies within the upper reaches of the West Aspetuck River Drainage Basin. With the exception of Camp Kenmont, occupied seasonally, and a number of residences along the shore, most of the watershed is relatively undeveloped. The watershed vegetation is dominated by undisturbed hardwood forests and swamps.

The lake’s main inflow originates in the slightly smaller and more elevated South Spectacle Lake, the overflow from which enters North Spectacle via a feeder stream under Rte. 341. North Spectacle has three lesser streams on the northwest and some springs feeding into it. A small dam, bolstered by beaver activity, contains the lake at its east end. An outflow stream carries water eastward to Beaman Pond and then south to form part of the headwaters of the West

Aspetuck River.

North Spectacle Lake, like South Spectacle Lake, has a water quality rating of AA. For many years it enjoyed good water clarity in summer: a study in 1999 reported clarity of over four feet in spring and fall, and clarity greater than three feet at the height of the summer when Connecticut lakes typically decline in clarity because of warmer temperatures and accelerated aquatic plant growth. Unfortunately, a 2006 report found significant degradation, including pond lilies and other pond vegetation filling in at an alarming rate.



Lake Waramaug, at more than 684 acres in size, is Connecticut's second largest natural lake. It has a maximum depth of 40 feet and an average depth of 22 feet. At its maximum seasonal water level it contains approximately 4.8 billion gallons of water behind its small concrete and masonry dam on the eastern end. Overflow from the lake goes into the East Aspetuck River. The lake is within the town boundaries of Kent, Washington and Warren, with Kent's portion comprising approximately 7% of the shoreline at the northwestern end. Originally known as Wonkkemaug, "the crooked pond," by the Native Americans who lived in this area, the lake has seen human activities on its shores for at least 10,000 years.

In 1920 the state established Lake Waramaug State Park in the Kent sector. The entire lake was declared a Heritage Lake by the State in 2000, because of its uncommon scenic quality and size. The lake has public access at two locations along the shore, one at the state park in Kent, the other at the southeastern end in New Preston near the Washington Town Beach. Since 2006 this latter site is the only place where non-residents may launch boats, following inspection of hull and trailer for attached invasives. Countless private access points, most of them associated with one-family houses, also dot the shore. In 1987 an aquatic survey of the lake found the following fish species: largemouth, smallmouth and calico bass; lake and rainbow trout; yellow and white perch; pickerel, alewives, sunfish and bullheads.

Beautiful as Lake Waramaug is, uncontrolled run-off from farms, septic systems, lawns, houses and roads in the lake's 14-square-mile watershed has severely affected water quality. By the 1960s algae bloom—an indicator of eutrophication or excessive nutrient enrichment due to fertilizer run-off and other causes—had reduced visibility to two feet or less in some areas. In 1975 the Lake Waramaug Task Force was established to develop a management program to save the lake. Since that time a watershed protection program has been created and two state-of-the-art, in-lake, layer aeration systems have been installed.

The Lake Waramaug Task Force also oversees an active invasive species prevention program that works to keep the lake free of milfoil and other fast-growing invasive aquatic plants.

Kent, like the other towns bordering Lake Waramaug, has established a Lake Waramaug Watershed District as an overlay district to its zoning regulations. Under Section 10 it sets stricter limits on pollution and sedimentation from development activities.

Leonard Pond, Hatch Pond and Mill Pond are part of a South Kent system of streams and ponds connected by Womenshenuk Brook, a tributary of the Housatonic River. This necklace of water elements is situated in a marble valley shaped by glaciers, with a mini-watershed of approximately 2,324 acres. The headwater, at a 550-foot elevation, is the small, largely drained former reservoir that once served the Kent Water Company.

Next in line is Leonard Pond at an elevation of 389 feet. Approximately 15-20 acres in size, Leonard Pond is used primarily as a recreational area for Club Getaway, but has a public access point along South Kent Rd. Yellow perch, chain pickerel, brown bullhead, largemouth bass and calico bass are resident. A broad swath of wetlands lies just south of Leonard Pond and is the site of a large heron rookery, protected in 2008 by the Kent Land Trust. Leonard Pond feeds southward into nearby Hatch Pond, which lies at 388 feet barely lower than Leonard Pond.

Hatch Pond, named for early farmer Barnabas Hatch, is 72 acres in size. On its western boundary is South Kent

School property and a number of private parcels. South Kent Rd. and the single track of the Housatonic Railroad run along its eastern bank. A working dairy farm borders the pond's marshy margins on the north, and a small state boat launch and park sits at its southern terminus. Hatch Pond is essentially a natural body of water fed by streams. However, a dam erected in 1912 at the lake's south end across the outlet to Womenshenuk Brook, raised its level by approximately three feet. The dam was restored in 2003.

Hatch Pond was used for commercial ice production in the 19th century and is today a popular recreational body of water heavily used for fishing in all four seasons. Over the last 40 years the health of Hatch Pond has declined sharply because of a high rate of "biological productivity." Aquatic plants and phytoplankton, supported by the nutrient content of the water, have increased dramatically. As plant content increases the water column becomes denser and less clear, particularly during the summer months, all of which affects the recreational possibilities of the pond.

In the summer of 1990, for example, Hatch Pond was classified mesotrophic (or of middling quality, based on water clarity that provided visibility five to eight feet down during summer months, phosphorus content that averaged 25.5 parts per billion; nitrogen that was 1,195 ppb, and weed growth that extended out to seven feet of water depth around the entire shoreline. During the summers of 2004 and 2005 water clarity dropped to one to four feet; phosphorus increased by 800%; nitrogen by 175%, and weed growth advanced to nine feet of water depth, covering 42% of the lake's surface.

Changes in Hatch Pond's depth, oxygenation and plant populations are indicative of its declining viability. In 1953 or thereabouts it had a maximum depth of 28 feet; but sediment has filled it in so much that its maximum depth today is estimated at 17 feet. Other measurements indicate that it has suffered more than a 50% loss in lake volume over this same period. Hatch Pond's oxygen levels have also become dramatically skewed, with the upper water levels becoming super-saturated with oxygen, while the lower levels, lying beneath the thermal boundary, are exhausted of oxygen (anoxic) during summer months.

Invasive Eurasian milfoil has become the dominant aquatic plant form and water lilies and pondweeds are widespread, crowding out native aquatic species. Hatch Pond continues to have an excellent largemouth bass fishery, abundant in 13-inch fish. Yellow perch and black crappie are also numerous. Connecticut Inland Fisheries additionally lists brown bullhead, calico bass, and chain pickerel in the pond. However, periodic fish kills caused by low dissolved oxygen concentrations will probably occur with increasing frequency if solutions to Hatch Pond's problems are not developed and implemented.

Steps are being taken by the Connecticut DEP, USDA, and the Kent Land Trust to reverse this process. For much more detailed analysis of Hatch Pond see the "Diagnostic Study of Hatch Pond," prepared by George Knoecklein, limnologist with Northeast Aquatic Research, LLC, published in 2006, on which much of the above information is based.

Mud Pond lies on the southern edge of South Kent verging into Gaylordsville. More a wetland than a pond today, it is fed primarily by Bull Mountain Brook on its route to the Housatonic River. Mud Pond's outlet at the southern end has been controlled historically by beaver dams. The water level can fluctuate by three feet and this has created a large area of valuable emergent woody vegetation that provides excellent habitat for water fowl. It is also an important habitat for a number of song birds.

In 1995 Weantinoge Heritage honored founder Alice McAllister by creating the McAllister Preserve to preserve the unusual calcareous-based ecosystem found in the wetlands and on adjoining hillside along Mud Pond. This type of wetland is quite rare in the eastern U.S. Of special interest within the McAllister Preserve are a number of black ash trees, including one with a trunk that measures more than 40 inches in diameter, the largest-known example in the state. The Preserve provides habitat for bobcats, bears and endangered goshawks. At least 45 species of neotropical birds are found here in large numbers, according to Weantinoge's land manager.

Upstream and feeding Bull Mountain Brook are Irving and Geer Mountain ponds, both privately owned.

Irving Pond, an 11-acre pond nestled at the base of Iron Mountain Farm off Geer Mountain Rd., is a man-made pond dating from the 1920s when Walter Irving bought the old John Judd and Cora Benedict farms. An ardent fisherman and a civil engineer, Irving dammed Upper Bull Mountain Brook, the small stream that flowed from the hillside. Irving dammed Upper Bull Mountain Brook, the small stream that flowed from the hillside. The dam consisted of a double wall of bricks



with a sizable space between filled with clay. The whole structure, stabilized on either side by sloped earthen banks, has an 18-inch pipe through the dam to permit the pond to be drained when needed. A solid cement spillway on the east side allows overflow during periods of heavy rain and snowmelt without causing erosion.

Irving stocked the pond with native brook trout, horned pout and smallmouth bass, which became the dominant species. The dam's greatest test came during the Flood of '55. The dam held. Irving Pond continues to be a sizable body of water but is much shallower than it once was because of excessive siltation and eutrophication.

Fuller Pond is a 40-acre glacial kettle pond and is today entirely spring fed. Located on Fuller Mountain at a water surface elevation of 909 feet, it is the centerpiece of Pond Mountain Trust. The approximately 800-acre preserve was created in the 1960s on land assembled from three different farms purchased between 1897 and 1905 by John Hopson, one of Kent's leading iron industrialists. Fuller Pond is notable for its remarkable depth—estimated at 66 feet at its deepest point—and the clarity of its water. An old man-made dam at the north end, separating the pond from some wetlands, has added perhaps another five acres to the pond's surface water area. Surrounding flora and fauna have been studied repeatedly because the area has been so little disturbed.

Jordan Pond, alias Cliff's Pond, just east of Appalachian Trail Rd. is approximately 10 acres in size and lies entirely within the property of the Friedman family. The pond is said to be 23 feet deep at its deepest point and its water quality excellent. It is fed by three freshwater streams. Named originally for the Jordan family who lived on the property for 12 years, it was renamed by the Friedman family for Cliff Friedman, who died in 2005. The pond is dammed at the southern end, with the overflow becoming the headwaters of Jack Brook. Jordan Pond is home to largemouth bass and pickerel.

Richards Pond on the east side of Skiff Mountain Rd. is a spring-fed pond approximately five acres in size. It was dredged, enlarged and dammed in the 1930s by Gurnsey Richards, the then-owner, and has been stocked with several

varieties of small fish. Remote and private, it is reportedly in excellent condition. It shares the same watershed as Fuller and Jordan ponds.

Chapel Pond lies at an elevation of 1100 feet near the New York State border on Preston Mountain. Its name derives from a farmstead that straddled the New York-Connecticut boundary owned by Aaron Chapel. Chapel, who arrived in the area in the late 18th Century as an African American freedman, owned nearly 400 acres here and the pond must have been important to his operation. It remains a source of Thayer Brook but is today otherwise remote, its surroundings returned to second growth forest. Survey records are not currently available, but the pond is about 13 acres in size. It lies entirely within the private property of the Preston Mountain Club.

Other, smaller ponds on the east side of the Housatonic River include Wolzel's Pond on the east side of Kent-Cornwall Rd. near Hickory Ledge Rd., Beaman Pond near the junction of Rte. 341 and Kent Hollow Rd. and Geer Mountain Pond, at the juncture of Treasure Hill and Richards roads.

On the other side of the Housatonic River are several other named ponds. Camp Pond lies just east of the New York/Connecticut state line. Case Pond, on Marvelwood School's Skiff Mountain campus, is the highest body of water in Kent at approximately 1,280 feet. Hilltop and Blatz ponds are also found in the Skiff Mountain Highlands area. Kent has literally dozens of other ponds that remain unnamed except, perhaps, to their owners.

Kent's Section of the Housatonic River

More than 11 miles of the Housatonic flow through Kent. Like all rivers in the state, the Housatonic River eventually empties into Long Island Sound. The path of the river through Kent has changed over the eons. At one point the river may have followed a more easterly course through the Leonard/Hatch/Mill ponds valley watershed.

Kent's section of the Housatonic is fed on the west side by a number of year-round and seasonal streams including Stony Brook, Stewart Hollow Brook, North Kent Brook, Choggam Brook, Macedonia Brook and Thayer Brook. Also contributing from the west are Bog Hollow Brook, which feeds into Macedonia Brook, and Jack Brook, which empties into Pond Mountain Brook en route to Macedonia Brook below. On the east bank of the river are Kent Falls Brook, Yuza Mini Brook, Mauwee Brook, Cobble Brook, Bull Mountain Brook, and Womenshenuk Brook.

Ten Mile River, which briefly runs along the border between Kent and Sherman, is a major tributary of the Housatonic River in this area. The West Aspetuck River enters the Housatonic only after it leaves southeast Kent to enter New Milford.

The river's tendency to flood seasonally created the conditions of fertile flood plains and limited tree growth at the base of the valley, providing the initial attraction for Kent's Native Americans and later settlers. The river offered abundant drinking water, irrigation for farming, and abundant fishing. As commerce developed it also offered limited transport for goods and people, and later a source of power for local industry—both hydro-mechanical (water wheels) and hydroelectric (electrical generation, see below). In more recent years the Housatonic River has become a prime attraction for tourism and recreation.



The plain south of downtown Kent is prone to occasional flooding. Much of it is in the 100-year flood zone, meaning less than 10 feet above average river level with an annual probability of flooding at 1% or greater. (See Map #7 Development Constraints.) The heaviest flooding in memory occurred in late August 1955 in connection with Hurricane Diane. Thirteen inches of rain fell within a 24-hour period in the river’s watershed, causing the river to rise many feet above flood stage. Parts of Kent Center School, Kent School, the sewage treatment plant and several houses are situated within the 100-year flood plain. Most of the village itself sits 25 feet to 45 feet above the river on a post-glacial terrace, well above the flood plain.

The average grade of the river through Kent is only 0.23%, with a total drop in elevation of 130 feet. There are some fast water sections in the first 5.5 miles where the river is shallow and rocky and contains islands. From Kent Furnace southward for 4.5 miles there is practically no drop in water level, a circumstance created by the containment of Bull’s Bridge Dam down river. The river gradually deepens here and is 200 feet to 400 feet wide. Occasional algae blooms are found in the nearly stagnant water.

Below Bull’s Bridge Dam the river narrows to a rocky gorge less than 100 feet wide and drops 55 feet over a quarter-mile distance. South of the village Rte. 7 runs right along the river, providing scenic views of the river and the forested hillside that covers much of the western flank. But north of the village the river runs through protected lands and a real wilderness experience can be had on the river itself.

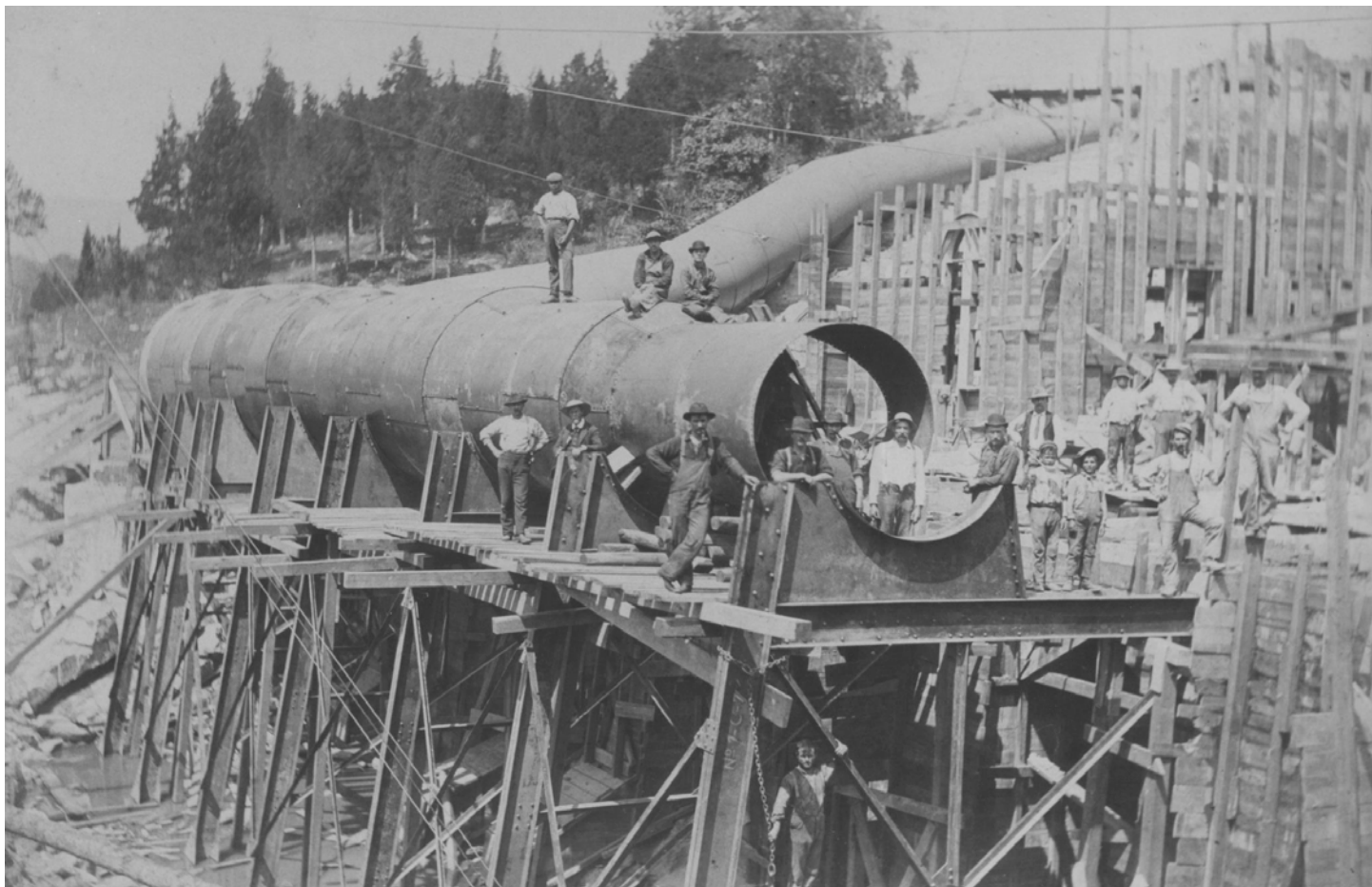
The Gaylordsville hydrologic station collects monthly stream flow or discharge data, measured in cubic feet per second or CFS. Selected mean monthly discharge at this river location for the period between 1980 and 2005 are as follows:

Jan.	1,770 CFS	July	832 CFS
Feb.	1,840 CFS	Aug.	690 CFS
Mar.	2,780 CFS	Sep.	669 CFS
Apr.	3,420 CFS	Oct.	1,070 CFS
May	2,090 CFS	Nov.	1,460 CFS
June	1,540 CFS	Dec.	1,900 CFS

In the 108 years that peak flow readings have been recorded on the Housatonic, the highest peak flow was 51,800 CFS in August 1955. Over the same century, peak flows rose above 30,000 CFS five times, most recently in May 1984; above 20,000 CFS nine times, and above 10,000 CFS 61 times. From 1990-2004 only three peak flows of >10,000 occurred; in the much briefer period from January 2005-June 2008 six such peak flows occurred, the highest being 19,900 CFS in April 2007. This recent sharp increase may be due to a change in water management at Bull’s Bridge Dam from “pond and release” to “run of the river.” Annual peak flows occur most frequently in March, second most in April and third most in January. Conceivably, it could also be a reflection of broader climate fluctuations.

Almost from the beginning of European settlement, the river’s health has been in jeopardy as users along its banks have dumped waste and other debris into its fast-moving waters. The most notorious example was the disposal of PCBs (polychlorinated biphenyls) at General Electric Company’s transformer plant in Pittsfield, MA, between 1932 and 1977. The PCBs turned out to be toxic to fish and to humans, and they contaminated river sediment not only in the first few miles downstream from Pittsfield, but to a lesser extent, in the catchments above the Falls Village and Bull’s Bridge dams.

In 1998 under powers granted to the federal government by the Resource Conservation and Recovery Act (RCRA) among several legal remedies, GE agreed to spend some \$200 million to carry out remediation work, most of it in the first two miles of the Pittsfield plant. They also agreed to pay an additional \$21 million in cash and project work to restore, replace or acquire the equivalent of injured natural resources in lower portions of the river. Extensive removal of PCBs has proved difficult, despite nearly two decades of study and effort. Public health advisories regarding the consumption of fish caught in the river continue in effect as many environmental groups, including the Connecticut and Massachusetts DEPs, the Housatonic Valley Association, the Housatonic River Commission, and the federal EPA work together to monitor the clean-up. However, the waters flowing through Kent have shown increasing improvement over time and continue to make the river an important recreational resource.



Constructing Bull's Bridge Canal, 1910

Hydropower on the Housatonic

Kent's hydroelectric station was built along the Housatonic River between 1902 and 1904 by the New Milford Electric Company, the first hydroelectric plant in Connecticut and one of the earliest in the nation. Nearly a thousand men, mostly Italian immigrants, were employed in the pick-and-shovel labor. Working in gangs of 20 to 30 each, many dug the associated 1.8-mile-long canal and lined the length with rock facing. Steam shovels blasted and removed bedrock in a few locations. Others were deployed to construct the dams: a 15-foot-high, 203-foot-long arc-shaped concrete dam to hold back the river, and a secondary, smaller dam on the west side of the river in an existing swale to accommodate overflow. A gatehouse controlled the flow by means of huge head gates that could be raised and lowered on tracks. With only a few revisions, the system proved a great engineering triumph. It remains in place today, generating 8.4 megawatts of electricity at peak capacity.

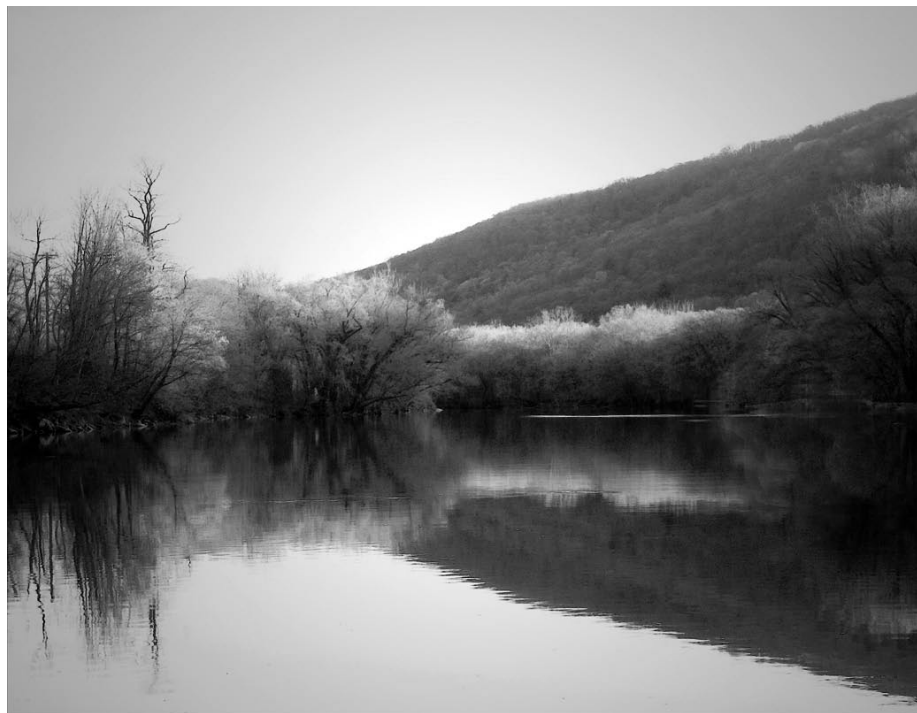
Power is generated as the canal diverts water from the river just north of the narrow, rocky gorge below Bull's Falls to carry it around to the power station downstream near the Kent/Gaylordsville line. The water then drops 115 feet through a penstock (large pipe) to drive six 1,400 kilowatt turbine generators before returning the water to the natural river bed. Along with five other hydroelectric stations on the Housatonic that have been added since, the Bull's Bridge Station is hooked into a transmission grid that is part of the New England Power Exchange.

The hydro stations have gone through a series of ownership changes in recent years. For decades they were owned by Connecticut Light & Power (CL&P), a subsidiary of Northeast Utilities. In the 1990s deregulation forced the division of electrical generation and transmission services and the generating stations were sold first to Northeast Generation Company, then in 2007 to FirstLight Power Resources, and at the end of 2008 were sold once again, this time to a French multinational, GDF Suez North America.

Other Kent Rivers and Streams

Macedonia Brook rises in the highlands of Sharon and crosses into Kent and Macedonia Brook State Park at about 960

feet in elevation, picking up strength from Hilltop Pond, Peck Pond, Whitten Swamp and the Westwoods wetlands as it travels. It drops 400 feet, passing over several lively falls, before it leaves the south end of Macedonia Brook State Park. After it joins with Bog Hollow Brook, it meanders its final 1.5 miles to the Housatonic River across the wide bottom lands and pastures along Rte. 341 and parts of the Kent School campus.



West Aspetuck River is Kent's largest tributary to the Housatonic River. Its principal headwaters begin at South Spectacle Lake from whence it travels through North Spectacle and Beaman Pond and then turns south, feeding a large wetlands area in Kent

Hollow on mostly fine-grained glacial meltwater sediments deposited over a marble substrate. From there the West Aspetuck flows to New Milford to join the East Aspetuck River before it spills into the Housatonic. The State of Connecticut rates the surface water quality of the West Aspetuck River as AA, the highest rating.

The West Aspetuck is home to native eastern brook trout, one of the few places where the population status is still intact. Brook trout survive only in the coldest and cleanest water, and as such are an indicator species of excellent water quality. Although in many places the river dwindles to a trickle in drier months, both the Weantinoge Heritage and Kent Land Trusts have recognized the West Aspetuck's importance and continue to seek opportunities to preserve acreage along its banks in the Kent Hollow area.

Riparian Corridor Protection

Lands adjacent to streams and rivers are often referred to as riparian corridors. Riparian corridors serve vital functions in the maintenance of biologically healthy and diverse stream and river ecosystems. Among their many values, vegetated riparian corridors naturally filter sediments, nutrients, fertilizers and other non-point source pollutants from overland runoff. They also maintain stream water temperatures suitable for spawning, egg and fry incubation and raising resident fish. Additionally, riparian corridors serve as reservoirs, storing surplus runoff for gradual release into streams during summer and early fall when streams are typically at their lowest point. During high water periods they act to stabilize stream banks and stream channels, thereby reducing in-stream erosion and aquatic habitat degradation.

Riparian corridors are a unique habitat for birds and provide a substantial food source for aquatic insects. The insects in turn represent a significant proportion of food for resident fish. Lastly, riparian corridors that include tree growth supply large woody debris to streams providing critical in-stream habitat features for aquatic organisms. Accumulations of large woody debris create gradual steps, gravel bars and pools that both disperse stream energy and create fish habitat.

Because of the importance of these functions, the DEP Inland Fisheries Division recommends that riparian corridors be protected and sets a minimum buffer of 100 feet of undisturbed land as the most effective natural mitigation measure protecting water quality and fisheries resources. The Kent Inland Wetlands Commission has jurisdiction over riparian areas within 200 feet of any watercourse in Kent. The Housatonic River Commission includes oversight of local and regional riparian protection as part of its mandate. Wetland and watercourse buffers are shown on Map #7.

Kent's many brooks have become of particular interest since the science department at Marvelwood School began participating in a DEP-sponsored monitoring program designated "Rapid Bioassessment in Wadeable Streams and Rivers by Volunteer Monitors."

Species Richness in Kent Streams

Due to the varying elevations in Kent and heavily forested tracts of land, Kent is blessed with many headwater and first-order streams. The forests provide shade to the streams, which in turn keeps temperatures low and dissolved oxygen levels high. Forests also provide the basis for food webs in the stream when leaves fall into the water, particularly in the autumn months. The streams are also very rocky and generally fast flowing. This creates key habitat for organisms known as riffle-dwelling benthic macroinvertebrates (RDBMI). These organisms are generally the larval stages of insects (stoneflies, mayflies, caddis flies, dragonflies, and the like) that are adapted to living in fast-moving water around and under rocks on the bottom of the stream bed.

Because the life cycle of many of these macroinvertebrates is often a year or more, their abundance and diversity are biological indicators of stream water quality. Macroinvertebrates are assigned pollution tolerance values that indicate the level of pollution they can tolerate. The index ranges from 0 to 10; those insects with tolerance values of 0 are completely intolerant of any disturbance and those with values of 10 are extremely tolerant of pollution. Streams with higher species richness tend to have better water quality. Environmental modification or disturbance (i.e. cutting down the trees around a stream, run-off from road salt, sand, fertilizers, manure, and soil erosion) can alter water quality and affect the movement, feeding behavior, development, and reproduction of macroinvertebrates.

A simple example of disturbance is removal of the vegetation that provides shade and cools a stream's water. The resulting solar radiation results in higher water temperatures that in turn diminish dissolved oxygen levels. Some RDBMI, such as stoneflies, begin to disappear and this in turn affects the food web in the stream, which slowly alters the populations of macroinvertebrates.

In Kent, surveys by Marvelwood students of macroinvertebrate populations using EPA-approved methodology indicate that at least 90% of the streams support pollution-sensitive macroinvertebrates, especially stoneflies, which indicate excellent water quality. (See Table 1 below) Two stonefly species found in Kent's streams have pollution tolerance values of "0" and are only found in a few streams in the State of Connecticut. Table 2 overleaf illustrates the seven most desirable RDBMI in Connecticut.

Table 1. Survey of Macroinvertebrate Communities in several Kent streams - Fall 2008
(Note: Stoneflies in shaded area are indicators of excellent water quality)

Order	Family	Pollution Tolerance Value	Macedonia Brook (upper)	Macedonia Brook (lower)	Kent Falls Brook	North Kent Brook	Segar Mountain Brook	Choggam Brook	Fuller Mountain Brook	Iron Mountain Brook	Conn-ery Brook
Ephemeroptera (Mayflies)	Heptageniidae	4	X		X		X	X	X		
	Oligoneuriidae	2	X		X	X		X	X		X
Plecoptera (Stoneflies)	Leuctridae	0			X						
	Peltoperlidae	0	X		X	X	X	X	X	X	X
	Perlidae	1	X		X	X	X	X	X	X	X
	Perlodidae	2	X		X	X	X				
	Pteronarcyidae	0	X		X						
Tricoptera (Caddisflies)	Hydropsychidae	4	X	X	X	X	X	X	X	X	X
	Philopotamidae	3	X		X	X	X	X	X	X	X
	Rhyacophilidae	0	X		X	X	X	X	X	X	
Diptera (True Flies)	Athericidae	2			X		X				
	Chironomidae	6	X			X	X	X		X	X
	Simuliidae	6	X			X					X
	Tipulidae	3	X	X	X	X	X	X	X	X	X
Coleoptera (Beetles)	Elmidae	4	X				X			X	
	Psephenidae	3	X		X	X	X	X	X		X
Odonata (Dragonflies/Damselflies)	Aeshnidae	3						X			
	Gomphidae	1	X			X		X	X		X
Megaloptera (Corydalidae)	Corydalidae	5	X	X	X	X		X			
Non-insect Macroinvertebrates	Amphipoda	6		X							
	Decapoda	6	X		X	X		X	X		X
	Earth Worms	8		X						X	X

Table 2. Most Wanted Riffle Dwelling Benthic Macroinvertebrates in Connecticut
(Note: Those in the shaded area have been found in Kent Streams.)

Order	Family	Common Name	Pollution Tolerance
Ephemeroptera	Ephemerelidae	Body Builder Mayfly	1
Ephemeroptera	Heptageniidae	2-tailed flat-headed Mayfly	4
Plecoptera	Peltoperlidae	Roach-like Stonefly	0
Plecoptera	Pteronarycidae	Giant Stonefly	0
Plecoptera	Perlodidae	Perlodid Stonefly	2
Diptera	Blephariceridae	Net-winged Midge	0
Trichoptera	Rhyacophilidae	Michelin Man Caddisfly	0
Trichoptera	Glossosomatidae	Turtle Shell Case Caddisfly	0

Marvelwood students have also sampled the water chemistry (dissolved oxygen, pH, alkalinity, total dissolved solids, and the like) as well as fecal coliform levels in the same streams. Chemical and biological testing confirm the excellent water quality in Kent's streams with the norm being dissolved oxygen values above 9, low dissolved solids values, cool temperatures and the absence of coliform bacteria. However, testing also indicates that a few streams, particularly those near farms or pasture lands, have compromised water quality based on assemblages of RDBMI populations and the presence of fecal coliform bacteria (i.e. Lower Macedonia Brook near Kent School and Appalachian Trail stream crossing and Womenshenuk Brook near Hatch Pond).

RECOMMENDATIONS

1. Require that new developments yield a zero increase in stormwater runoff from the property.
2. Minimize the concentration of road and parking area runoff to subsurface drains, since this practice leads to larger peaks in stream run-off and pollution and less groundwater recharge.
3. Encourage native vegetated buffers along open water to reduce water pollution, improve wildlife habitat, and maintain or enhance the natural look of the water's edge.
4. Discourage excessive irrigation of fields, fairways, lawns and gardens, as this can have a significant impact on both surface water levels and groundwater levels, especially during times of drought.
5. Make the town Aquifer Protection Zone an integral part of Kent's zoning map and tighten regulations.
6. Establish size limits for new docks on lakes and ponds.
7. Develop and distribute educational materials regarding safe disposal of household chemicals and automotive waste to reduce non-point source pollution of groundwater.
8. Support efforts to restore the health of Hatch Pond.
9. Work with Warren and Washington to adopt town ordinances authorizing Lake Waramaug police to issue warnings and fines to persons boating on the lake without an approved inspection sticker.

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