

Environmental Resources

Introduction

Brighton Plantation is fortunate to be surrounded by exceptional natural beauty and a high-quality environment. Brighton consists of 40 square miles (approximately 25,600 acres), of which 0.7 square miles (448 acres) or 1.75% is water.

The 39.3 square miles or approximately 25,152 acres of Brighton's land is largely forested. Brighton's natural resources are responsible for productive forest and farmland, clean water, and wildlife habitat. The most noticeable natural feature in Brighton Plantation is that vast expanses of forest cover throughout the 39.3 square miles of land, leaving no doubt that forestry is the largest industry in the town.

This chapter identifies and documents Brighton's natural and water resources and identifies the physical limitations the natural environment imposes on the planning process for future development.

Natural Land Resources

Geology and Soils

Brighton's soils – and the rock that supports them – influence the topography and the type of vegetation, and constrain endeavors of development, farming, and forestry.

The State Plumbing code has a list of soils that are unsuitable for subsurface waste disposal. The plumbing code concentrates on soils in which septic systems will not function, because water is too near the surface, or the slope is too steep. Soils with water too near the surface are:

Biddeford silt loam

Monarda silt loam

Walpole fine sandy loam

Leicester stony loam

Peat and muck

Limerick silt loam

Brighton's **Soils Map** (Appendix) shows soils by type and location. Maps of these soils involve a degree of generalization. A mapped area of poor soil does not by itself exclude development; however, it does make potential developers aware of challenges.

Regardless of soil type, when cleared of vegetation, all soils are subject to accelerated erosion. Eroding soil contributes to the degradation of water quality. Silt can reduce visibility, harm fish populations, and contribute phosphorus and other destabilizing nutrients into waterbodies. Phosphorus is a naturally occurring nutrient that, when present in high concentrations, can cause algal blooms. Eroding soil and unmanaged stormwater runoff have been documented as the primary source of increased phosphorus levels in Maine's lakes, resulting in reduced property values and recreational opportunities.

Article 4- Performance Standards Applicable to Land Use Districts in Brighton's Land Use Zoning Ordinance sets standards to protect against excessive erosion during and after construction, though these standards are outdated. Brighton is in the process of updating their Land Use Zoning Ordinance to more current standards.

Topography

Brighton's topography is depicted on the [Topographic Map](#) (Appendix). The ponds represent the low points of topography. Smith Pond, for example, is the low point between Foss Mountain at 458 meters elevation and Kelly Mountain at 487 meters elevation.

The state Plumbing Code limits the installation of septic systems to land with an original slope of 20 percent or less. Article 4- Performance Standards Applicable to Land Use Districts in Brighton's Land Use Zoning Ordinance sets standards for each district based on soil type and land use activity.

The topography of the land contributes to water bodies and their drainage basins or watersheds. A watershed is the area of land within which all precipitation drains to a single water body. The delineation of watersheds ([Water Resources Map](#)) shows how water runs off the land, where it accumulates, and how it collects into larger bodies of surface water.

Scenic Resources

Topography and geography are the primary components of scenic vistas and resources. While it is said that the quality of a scenic vista is "in the eye of the beholder," it is often the case that varied topography and overlooking perspectives rank consistently high. In Brighton, several vistas are notable:

- Kelly Mountain Fire Tower
- Smith Pond
- Wyman Pond

Water Resources

Floodplains

A floodplain is an area adjacent to a water body that is subject to periodic flooding. Brighton's 100-year floodplains are depicted on the Critical Natural Resources Map in the Appendix. A 100-year flood refers to a flood event that has a 1-percent chance of occurring in any given year. This designation is significant because federal law requires local regulation of 100-year floodplains. Brighton has an approved local Floodplain Management Ordinance, which is enforced in accordance with state and federal standards and requires periodic review and updates.

Due to Brighton's naturally hilly topography, most floodplains are minimal and localized. The primary areas of concern are located near the Heart of Maine area, particularly along Route 154 where beaver activity from neighboring Wellington can cause damming and

periodic roadway flooding. Another area of concern is near Corson Brook, where the topography and hydrology also contribute to occasional localized flooding. These specific areas merit continued monitoring and maintenance to ensure infrastructure resilience and public safety.

Groundwater

Enough groundwater exists in Brighton, as throughout much of Maine, to support residential uses. Larger supplies of groundwater are stored in underground aquifers located in sand and gravel deposits.

A “significant aquifer” provides a water supply in large enough volumes to support commercial use; however, all groundwater in Brighton—whether designated significant or not—should be protected from contamination. While aquifer-related soils often support effective septic systems, development over these areas increases the risk of groundwater pollution from a variety of sources.

There are three significant sand and gravel aquifers in Brighton, evaluated by the Maine Geological Survey as having moderate to good groundwater yield—generally greater than 10 gallons per minute. Two of these are located on the west shore of Smith Pond, and the third is near the west shore of Mayfield Pond (see [Critical Natural Resources Map](#) in the Appendix).

Local groundwater is the sole source of drinking water for all Brighton residents, as there is no public water system. Given this, any threats to groundwater are of serious concern. Potential Groundwater Concerns in Brighton

While residential development densities remain low, there are several localized threats to groundwater quality that warrant attention:

- Farrin Brothers & Smith’s operations may require remediation efforts. Though most mechanical work is now done inside the garage, in earlier decades, oil changes and equipment maintenance were often done outside, increasing the risk of petroleum contamination.
- The municipal salt shed was only recently covered. For many years, road salt was stored uncovered, raising the possibility of chloride infiltration into nearby groundwater or streams, especially during the spring thaw.
- There is local knowledge of timberland owners spreading paper mill sludge on clearcuts in past decades. This now-discouraged practice may have long-term impacts on soil and water quality depending on the composition of the sludge.
- Brighton’s closed municipal dump was historically used for the disposal of household and possibly commercial waste. Reports of waste being thrown over

the bank and occasional dump fires raise additional concerns about legacy contamination in soils and potential leaching into groundwater.

Although no specific violations have been documented for these practices, their cumulative impact over time may warrant further investigation and long-term water monitoring in certain areas.

In addition to manmade risks, naturally occurring elements can also impact well water quality in Brighton:

- Arsenic (As) and Radon (Rn) are both present in many parts of Maine and are known carcinogens. These contaminants originate from the local bedrock but can also be influenced by historical industrial or agricultural activity. Homeowners are encouraged to regularly test their well water and seek guidance from the town or Maine CDC on treatment options.
- Per- and Polyfluoroalkyl Substances (PFAS) are an emerging class of contaminants increasingly detected in drinking water across Maine. These “forever chemicals” have been found in association with agricultural sites, sludge spreading areas, landfills, and fire-fighting foam use. Brighton is not known to have documented PFAS contamination to date, but given past sludge spreading practices, the potential for localized contamination exists. As the science and regulations surrounding PFAS continue to evolve, guidance and testing support are becoming more available to Maine residents.

Surface Waters

The surface water resources in town are a critical factor in environmental quality. Not only do they provide an essential element in the natural beauty of Brighton, but they also contribute considerably to the health and welfare of the residents and wildlife.

Many land use practices can impact surface water quality. For example, improperly functioning or unsuitably located wastewater disposal systems may cause bacteria to contaminate surface waters. Poor agricultural practices can result in nutrient enrichment of waterbodies (e.g., phosphorus). Construction activities create erosion and siltation, potentially reaching waterbodies. Any improperly managed land use or land-based activity can accelerate degradation of water quality. The first step in managing the community's surface waters is to understand the systems, their existing quality, and factors that influence their quality.

All water bodies are required by state law to be locally protected through the Shoreland Zoning Ordinance. Brighton has a 250-foot shoreland area established under the state guidelines, along its larger wetlands, rivers, and streams. These restrictions affect what people may do with their land in the immediate vicinity of the shoreland to protect water quality. The Existing Land Use chapter of this plan details Brighton's Land Use Zoning Ordinance further.

In accordance with the present laws, Brighton must adopt restrictions to protect shorelines and other land resources, consistent with state requirements. As Brighton has reclaimed land use authority from the Land Use Planning Commission, the town's land use regulations must not be "less protective of the existing natural, recreational, or historic resources than those adopted by the commission".

Rivers and Streams

There are numerous perennial streams in Brighton, including the East Branch of the Wesserunsett Stream, Fall Brook, Meadow Brook, Higgins Stream, and Grant Brook, to name a few. The [Water Resources Map](#) in the Appendix details their locations in town.

The state has four classifications for freshwater rivers, streams, and brooks: AA, A, B, and C. The classification system should be viewed as a hierarchy of risk more than for use or quality assessment. Ecosystems that are more natural in their structure and function can be expected to be more resilient to new stressors and to show more rapid recovery. The classifications are detailed below.

- **Classes AA** involve little risk since activities such as waste discharge and impoundment are prohibited. The expectation to achieve natural conditions is high and degradation is unlikely.
- **Class A** waters allow impoundments and very restricted discharges, so the risk of degradation, while quite small, does increase since there is some small human intervention in the maintenance of the ecosystem.
- **Classes B** has fewer restrictions on activities but still maintain high water quality criteria. Class B is considered more at risk than a Class A stream. The risk is the possibility of a breakdown of the ecosystem and loss of use due to either natural or human-caused events.
- **Classes C** has the least restrictions on use and the lowest (but not low) water quality criteria. Classes C waters are still good quality, but the margin for error before significant degradation might occur in these waters in the event of an additional stress being introduced (such as a spill or a drought) is the least

Figure 1 below shows the water quality for the streams throughout Brighton. The streams in blue are Class A waterbodies and the streams in green are Class B waterbodies.

FIGURE 1: STREAM WATER QUALITY



Source: Maine Statutory Water Classification

Class A waterbodies are the second highest in water quality; therefore, they are at a lesser risk for degradation.

Class B waterbodies are suitable for drinking water supply, recreation in and on the water, fishing, industrial processes and cooling water supply, hydroelectric power generation, navigation and unimpaired habitat for fish and other aquatic life.

The **Water Resources Map** (Appendix) shows Brighton's streams, lakes, ponds, and wetlands. Wyman Pond, Smith Pond, Trout Pond, and Mayfield Pond are bounded by the Protection Subdistrict of Great Ponds; thus, they have a setback requirement of 250 feet from the normal high-water line.

All streams in Brighton are the Protection Subdistrict of Shoreland, broken down further as PSL 1 or PSL 2. Those given PSL 1 status have a setback of 250 feet from the normal high-water mark; whereas those given PSL 2 status have a setback of 75 feet from the normal high-water mark.

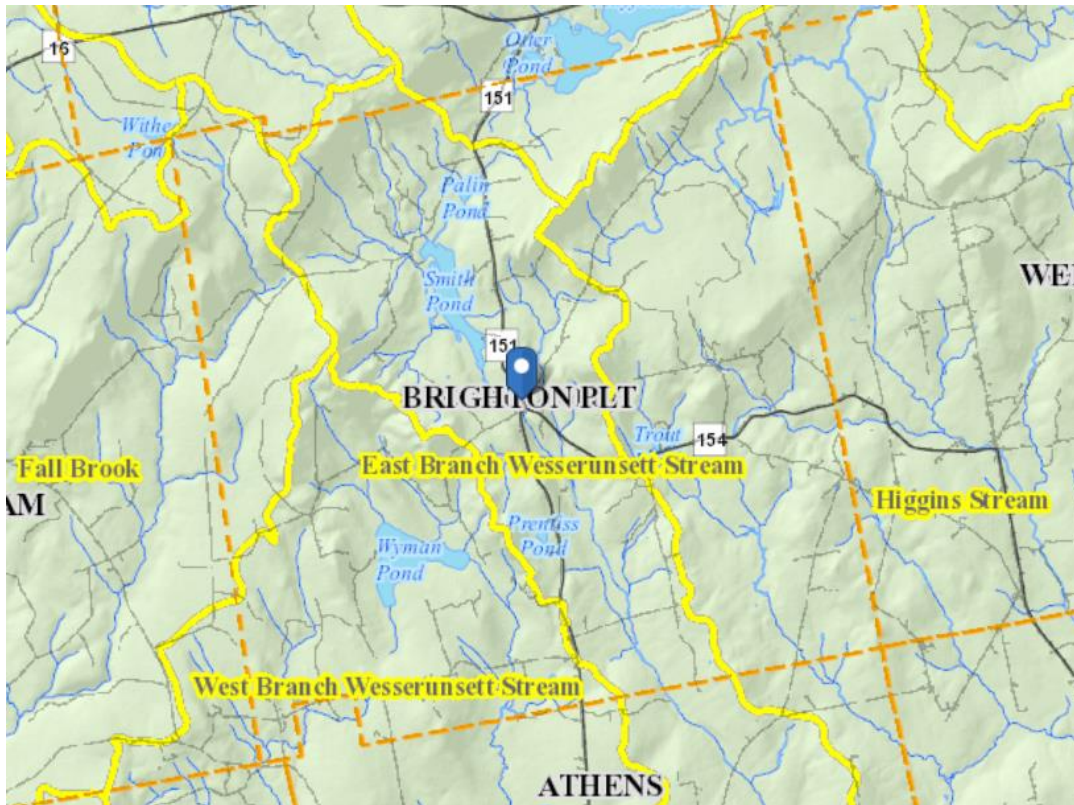
The Shoreland Development District and the Protection District require a setback of 250 feet from the normal high-water line.

Watersheds:

A watershed is a natural drainage basin that collects precipitation and sends it to a body of water through an interconnected system of streams, brooks, and other wetlands. Unmanaged or improper human activities in any part of a watershed can negatively affect the water quality of the waterbody into which the watershed drains.

Brighton has all or part of six separate watersheds. See Figure 2 for details.

FIGURE 2: WATERSHEDS IN BRIGHTON PLANTATION



Source: *Beginning with Habitat*

Figure 2 Highlights:

- The primary watersheds in Brighton are: West Branch Wesserunsett Stream, East Branch Wesserunsett Stream, Fall Brook, and Higgins Stream.

The Higgins Stream Watershed is part of the much larger Great Moose Lake Watershed, which encompasses 68,522.48 acres in Brighton, and several other towns across several counties. The DEP lists this large watershed as an “Impaired Lake Watershed”. A watershed is considered ‘impaired’ if one of its designated uses, such as human recreation or aquatic habitat, is being harmed by a pollutant. The ecological and economic values of Great Moose Lake Watershed contribute to its value. This area is home to at least three rare animals, as well as an uncommon floodplain forest community.

The concerns about the Great Moose Lake Watershed include degraded water quality due to septic systems and other contaminants, potential impacts of fish stocking, algal growth, pollutant runoff, and impaired wildlife habitat from development.

Wetlands

Wetlands are essential parts of a healthy environment. As natural low points, they absorb flood waters. As a lush and moist habitat, they are the best and sometimes only breeding areas for fish and wildlife, including most waterfowl. They have been proven to hold sediments and nutrients from waters before they reach streams, straining out pollution. Wetlands also serve as important travel corridors for many species of wildlife and provide open space for some forms of recreational enjoyment and/or aesthetic appreciation.

While a precise definition of a wetland is not universally accepted, making it difficult for local authorities to enforce the laws, wetlands share three essential elements. They all have non-permeable soils, a water table at or near the surface, and there is a presence of water-loving vegetation (rushes, cattails, red maple).

There are more than 10 such wetlands in Brighton ([Water Resources Map](#), [Critical Natural Features Map](#) in the Appendix), identified as National Wetland Inventory by the U.S. Fish and Wildlife Service. Several of these include Bryant Bog, Potter Bog, Decker Bog, Scribner Bog, the shorelines of Palin Pond, Smith Pond, and Wyman Pond. Nearly all lakes and ponds in Brighton have at least some wildlife wetlands connected to them.

There is a significant wetland area on Brighton's northwest border with Wellington. The wetland is part of Higgin Stream, and part of an unnamed tributary originating from an unnamed pond on the town's western border. Many of the larger wetland areas have been delineated as Inland Waterfowl/Wading Bird Habitat (IWWH) on the National Wetland Inventory by the U.S. Fish and Wildlife Service.

These areas are protected by Brighton's Land Use and Zoning Ordinance which designates these and other sensitive areas as Protection Districts and sets special requirements for any allowed land uses. Brighton's Land Use and Zoning Ordinance is detailed further in the Existing Land Use chapter.

Lakes and Ponds

Brighton's lakes and ponds are a defining feature of the town's rural, pristine landscape. Large, open bodies of water provide scenic views, a variety of recreational opportunities, important fish and wildlife habitats, and sources of drinking water.

Brighton's Land Use Zoning Ordinance's provides protective measures for water quality. All lakes and ponds within Brighton are in the Protection District (detailed fully in the Existing Land Use chapter). This District's purpose is to protect sensitive and significant resources of all water bodies (including lakes and ponds), flowing streams, wetlands, floodplains and in shoreland areas along such water bodies, to maintain water quality;

scenic and recreational values; protect plant, fish, and wildlife habitat; minimize flooding, and maintain ground water and ground water recharge areas.

The state designates waterbodies encompassing 10 acres or more as Great Ponds. Great Ponds and their shorelands are subject to special regulations through Shoreland Zoning and Maine's Natural Resources Protection Act. The state has one standard of classification for both Great Ponds and natural lakes and ponds less than 10 acres in size; this classification is GPA. The water quality attainment goal for Class GPA waterbodies is that they are suitable for drinking water, recreation, fishing, hydro-electric power generation and as natural habitat for fish and other aquatic life. If a water body is not meeting its attainment goal, it is described as a "nonattainment" lake.

All water bodies in Brighton are listed on Maine DEP's Integrated Report as meeting Environmental Protection Agency (EPA) category #2- "Attaining some designated uses- Insufficient information for others". As with the water classification system for rivers, this classification should be viewed as hierarchy for risk, rather than for use or quality assessment, with the risk being the possibility of a breakdown of the ecosystem and loss of use due to either natural or human-caused events.

The following section describes the natural features and characteristics of the 11 ponds and lakes in Brighton. Included in these descriptions are an assessment of water quality based on eight indicators when data is available. Those indicators are listed along with the State's averages below.

Water Quality Assessment and State Averages	
Transparency	Transparency is set at a certain water depth. Factors that reduce water clarity are algal blooms, zooplankton, the color of the water, and silt, with algae being the most abundant. In Maine, average SDT readings relate to algal productivity using the following guidelines: Productive = 4 m (13 ft) or less; Moderately Productive = 4 - 8 m (13 - 26 ft); Unproductive = 8 m (26 ft) or greater. In Maine, the current overall average for transparency is 5.5 meters.
Chlorophyll	This test measures the green pigment found in plants, including microscopic algae. This measure is used to estimate algal biomass --the higher the chlorophyll content, the higher the quantity of algae in the lake. Epilimnetic Chlorophyll-a has varied from 0.3 ppb to 182 ppb in Maine lakes, with an average of 5.4 ppb.
Phosphorous	Phosphorus is a major plant nutrient needed for growth; however, high phosphorus levels are often a sign of pollutants entering the waterbody. As levels of phosphorus increase, the quantity of algae increases, resulting in reduced water quality. Maine lakes show variation in Epilimnetic TP from 1.0 ppb to over 426.0 ppb, with an overall average of 11.1 ppb.
Color	This measure refers to the amount of dissolved organic acids such as tannins and lignin, resulting in tea-colored water. The unit of measure for color is Standard Platinum Units or SPU. Color reduces the lake's transparency and increases phosphorus readings. True Color ranges from 0 to 197 SPU in Maine lakes, with an overall average of 20.7 SPU.
Alkalinity	This is the measure of the capacity of the water to neutralize acids (called buffering). A waterbody's ability to buffer acids is affected by the natural geology of the surrounding area, and the presence of naturally available bicarbonate, carbonate, and hydroxide ions. It is measured in milligrams per liter (mg/L). Epilimnetic alkalinity samples in Maine lakes have varied from -1.5 milligrams per liter (mg/L) to 190.0mg/L, with an overall average of 11.7 mg/L.
pH	Like alkalinity, pH is the measure of acidity of the water. How acidic or basic the water is will determine which plant and animal life will be present. The measure of acidity is on a scale of 1 to 14, with 7 indicating neutral acidity, 1 being highly acidic, and 14 being highly basic. A one-unit change in pH represents a 10-fold change in the concentration of hydrogen ions (H ⁺), which determines the acidity of the water. Epilimnetic pH samples in Maine lakes can vary from 4.2 to 9.6 in Maine, with an overall average of 6.8.
Conductivity	Specific conductivity measures the ability of the water to carry an electrical current and is related to the dissolved ions (charged particles) in the water. Conductivity is measured in microSiemens per centimeter. This quality is used to calculate fish yield estimates. Specific conductivity will increase if there is an increase in pollutants entering the water, usually in the form of runoff from urban or residential areas and roadways. The average conductivity for all Maine lakes is 53.0 μ S.cm (micro-Siemens per centimeter).
Dissolved Oxygen	Adequate levels of dissolved oxygen (DO) in water bodies are essential to most life in the water. DO is an important indicator of water quality and it influences water chemistry. DO levels are strongly affected by water temperature: warmer water is less dense and its ability to hold oxygen is reduced.

Source: *Lakes of Maine- 2025*

Epilimnion: the warmer top layer of water in a stratified lake which rests on top of cooler bottom waters. The epilimnion is the section of the lake that usually receives the most light, wind activity, and mixing, and contains most of the biological organisms living in the lake. Many water samples are taken from the epilimnion because of its importance to the biota and productivity of the lake.

Bryant Bog

Area: 4 acres

Invasive species: unknown

No additional information was available for Bryant Bog.

Mayfield Pond

Area: 188 acres

Maximum Depth: 39 feet

Mean Depth: 14 feet

Invasive species: None known

Fisheries management: Cold and warm water

Fish species:	
American Eel (<i>Anguilla rostrata</i>)	Blacknose Dace (<i>Rhinichthys atratulus</i>)
Banded Killifish (<i>Fundulus diaphanous</i>)	Brown Bullhead (<i>Ameiurus nebulosus</i>)
Brook Trout (<i>Salvelinus fontinalis</i>)	Common Shiner (<i>Luxilus cornutus</i>)
Chain Pickerel (<i>Esox niger</i>)	Rainbow Smelt (<i>Osmerus mordax</i>)
Creek Chub (<i>Semotilus atromaculatus</i>)	Golden Shiner (<i>Notemigonus crysoleucas</i>)
Redbreasted Sunfish (<i>Lepomis auratus</i>)	Landlocked Salmon (<i>Salmo salar</i>)
Pumpkinseed (<i>Lepomis gibbosus</i>)	Rainbow Smelt (<i>Osmerus mordax</i>)
White Perch (<i>Morone americana</i>)	Splake (<i>Salvelinus hybrid</i>)
White sucker (<i>Catostomus commersoni</i>)	

Source: Lakes of Maine

There is no record on crayfish, mussels, plants, or Dissolved Oxygen for Mayfield Pond

Loon counts have taken place on Carlton Pond sporadically since 1983. The loon population has varied over the years.

Year	# Adults	# Chicks
2014	4	0
2019	2	0

Water Quality Variable	State Average	Mayfield Pond
Transparency	5.5 M	4.8 M
Chlorophyll	5.4 ppb	5.2 ppb
Phosphorous	11.1 ppb	9 ppb
Color	20.7 SPU	16 SPU
Alkalinity	11.7 mg/L	12.7 mg/L
pH	6.8	No data
Conductivity	53.0 μ S/cm	32 μ S/cm
DO		

Source: Lakes of Maine

All the above information indicates that Mayfield Pond has slightly above average water quality when compared to state averages, most likely due to the undeveloped nature of the watershed, including an undeveloped shoreline.

Palin Pond

Area: 9 acres

Invasive species: None known

No additional information was available for Palin Pond.

Potter Bog Pond

Area: 6 acres

Invasive species: None known

No additional information was available for Potter Bog Pond.

Prentiss Pond

Area: 8 acres

Invasive species: None known

No additional information was available for Prentiss Pond.

Smith (Weeks) Pond

Area: 166 acres

Maximum Depth: 32 feet

Mean Depth: 15 feet

Invasive species: None known

Fisheries management: Cold and warm water

Fish species:	
American Eel (<i>Anguilla rostrata</i>)	Blacknose Dace (<i>Rhinichthys atratulus</i>)
Banded Killifish (<i>Fundulus diaphanous</i>)	Brown Bullhead (<i>Ameiurus nebulosus</i>)
Brook Trout (<i>Salvelinus fontinalis</i>)	Rainbow Smelt (<i>Osmerus mordax</i>)
Chain Pickerel (<i>Esox niger</i>)	Brown trout (<i>Salmo trutta</i>)
Pumpkinseed (<i>Lepomis gibbosus</i>)	White sucker (<i>Catostomus commersoni</i>)
White Perch (<i>Morone americana</i>)	

Source: Lakes of Maine

There is no record on crayfish, mussels, plants, loons, or Dissolved Oxygen for Smith Pond.

Water Quality Assessment:

Variable	State Average	Mayfield Pond
Transparency	5.5 M	5.8 M
Chlorophyll	5.4 ppb	2.8 ppb
Phosphorous	11.1 ppb	8 ppb

Color	20.7 SPU	10 SPU
Alkalinity	11.7 mg/L	15.1 mg/L
pH	6.8	No data
Conductivity	53.0 µS/cm	35 µS/cm

Source: Lakes of Maine

All the above information indicates that Smith Pond has slightly above average water quality in most tested areas when compared to state averages. Smith Pond drains into the Wesserunsett Stream.

Trout Pond

Area: 11 acres

Invasive species: None known

Fisheries management: Warmwater

Fish species:	
Pumpkinseed (<i>Lepomis gibbosus</i>)	Bluegill (<i>Lepomis macrochires</i>)
Banded Killifish (<i>Fundulus diaphanous</i>)	Brown Bullhead (<i>Ameiurus nebulosus</i>)
Brook Trout (<i>Salvelinus fontinalis</i>)	Green sunfish (<i>Lepomis cyanellus</i>)
Chain Pickerel (<i>Esox niger</i>)	Largemouth bass (<i>Micropterus salmoides</i>)
Yellow Perch (<i>Perca flavescens</i>)	Golden Shiner (<i>Notemigonus crysoleucas</i>)
White sucker (<i>Catostomus commersoni</i>)	

Source: Lakes of Maine

There is no record on crayfish, mussels, loons, plants, or water quality data for Mayfield Pond

Wyman Pond

Area: 220 acres

Maximum Depth: 15 feet

Mean Depth: 8 feet

Invasive species: None know

Fisheries management: Warmwater

There is no water quality data for Wyman Pond, nor is there data on crayfish, mussels, loons, or plants. Wyman Pond drains into the Wesserunsett Stream.

Fish species:
Pumpkinseed (<i>Lepomis gibbosus</i>)
Chain Pickerel (<i>Esox niger</i>)
White sucker (<i>Catostomus commersoni</i>)
White Perch (<i>Morone americana</i>)

Source: Lakes of Maine

Threats to Brighton’s Water and Natural Resources

The single greatest threat to water quality in Brighton is the introduction of phosphorus through runoff within the watershed. Phosphorus is a naturally occurring nutrient essential for plant growth; however, in excess, it leads to nuisance algal blooms, excessive aquatic plant growth, and reduced dissolved oxygen levels—conditions that can ultimately result in fish die-offs and long-term degradation of waterbodies.

The amount of phosphorus entering local ponds, streams, and lakes is directly linked to human activities that disrupt the watershed. In Brighton, the primary contributors to phosphorus loading include:

- Poorly maintained gravel camp roads and driveways, especially those near shoreline areas;
- Erosion due to lack of vegetative buffers;
- Runoff from impervious surfaces such as rooftops or driveways;
- Fertilizer use for agricultural or lawn care;
- Failing or outdated septic systems, particularly in seasonal homes converted to year-round residences.

Impervious surfaces, when not properly managed, channel stormwater runoff directly into nearby waterbodies. This runoff can pick up phosphorus, oil, sediment, and other pollutants along the way. In Brighton, gravel driveways and camp roads, especially in the Shoreland Zone, are common sources of sediment and phosphorus runoff.

Faulty or undersized septic systems also pose a notable threat—particularly those installed prior to modern standards. While the State of Maine requires a septic inspection for any transfer of property within the Shoreland Zone, this requirement is not triggered when properties are passed down informally through generations without a change in recorded ownership. Unlike some towns, Brighton does not currently require that septic inspection reports be filed with the town, which limits the ability to track system adequacy over time.

Agricultural runoff and fertilizer use near lakes and streams can also contribute to algal blooms. In areas where lawns extend to the water’s edge without a natural buffer, stormwater flows unfiltered into the waterbody, carrying nutrients with it.

Brighton’s Road Commissioner and Public Works operations follow Best Management Practices (BMPs), particularly when working on or near sensitive areas like streams, culverts, and ditches. Erosion and sedimentation are carefully managed during ditching, grading, and culvert replacement projects, especially given the plantation’s network of rural gravel roads.

Salt and sand storage is a known issue. For many years, the town stored road salt uncovered, increasing the risk of chloride runoff, especially near Wesserunsett Stream

and other adjacent waterways. While a new structure has since been built, continued monitoring and future improvements could help minimize environmental impacts.

Although most equipment maintenance now occurs inside the town garage, there is a legacy of older practices, such as oil changes or equipment washing being done outside, which could have contributed to localized contamination.

The Public Works Department makes use of guidance from the Maine Department of Transportation and other state resources to incorporate BMPs into daily maintenance and roadwork routines, helping reduce the risk of runoff and erosion that could impact Brighton's surface waters.

Point and Nonpoint Source Pollution

Point Source Pollution can be linked back to one location, or point, such as a leaking oil tank. Point sources come from a direct source and are easily identified and managed.

Nonpoint Source Pollution cannot be traced to one sole source. One example is stormwater runoff. Stormwater can come from anywhere, especially impervious surfaces. Stormwater is water that does not soak into the ground during a precipitation event, but flows on top of the ground instead, to a body of water. As this water travels across the surface of the ground, it collects pollutants such as petroleum products, heavy metals, fertilizers and manure, which can originate from any location within a watershed. Where stormwater runoff erodes soil, the soil itself transports phosphorus into waterbodies.

Point sources of pollution in Brighton (potential and actual) include:

- The sand/salt storage area, although it is noted by the DEP that it is 600 feet away from the nearest drinking water well. It is, however, near Wesserunset Stream.
- Three ash utilization sites known as the Richmond Site Fields 1, 2, & 3. They are located on Rt 154. Gorbell Thermo Electron Power Co. received a Permit by Rule to land spread wood ash on eight fields totaling 67 acres. The crops grown on the fields are grass and legumes. The license was issued in October 1995.
- The Municipal Landfill, which is a remediation site. Brighton Plantation Municipal Landfill, a one-acre site, is on Route 145. As of 7/30/1996, it is listed by the DEP as "remedy in place- closed".

The state does not have any documentation on nonpoint sources of pollution in Brighton; although any impervious surface has potential for carrying pollutants to waterbodies.

Brighton's Land Use Zoning Ordinance includes language and performance standards specifically to protect natural resources. In fact, Brighton's Comprehensive Plan and Land Use Zoning Ordinance favors the preservation and protection of natural resources over development. The minimal amount of development in Brighton is indicative of the town's preference for preservation of the environment over development.

In the Land Use Zoning Ordinance, Article 4. Performance Standards, details requirements specific to each zoning district in Brighton. Since each district has different allowable land uses, this ensures standards are detailed thoroughly for each zoning district and different land uses.

Wildlife Habitat in Brighton

Waterbodies, watercourses, and wetlands are necessary habitats for the continued survival of many wildlife species. Unfragmented blocks of land are as essential to high-quality habitat as the many watercourses and wetlands found in Brighton because they provide sanctuary for woodland birds, and other wildlife species, including critical habitat for some rare or endangered species.

The extent and quality of wildlife habitat is an indicator of not just the richness and diversity of the flora and fauna in Brighton, but the overall health of the ecosystem. The availability of high-quality habitat for plants, animals, and fish is essential to maintaining abundant and diverse populations for ecological, economic, and recreational purposes.

The Maine Department of Inland Fisheries and Wildlife (MDIF&W) administers a program called Beginning with Habitat (BwH) to identify significant wildlife habitat and critical natural areas under the National Resources Protection Act.

BwH, a collaborative program of federal, state, and local agencies and non-governmental organizations, is a habitat-based approach to conserving wildlife and plant habitat on a landscape scale. The goal of the program is to maintain sufficient habitat to support all native plant and animal species currently growing and breeding in Maine. BwH compiles habitat information from multiple sources, integrates it into one package, and makes it accessible to towns, land trusts, conservation organizations, and others to use in a proactive approach to conservation. This information can be seen on Brighton's **Critical Natural Resources Map** in the Appendix, with descriptions of essential features below.

Significant habitats, as defined by MDIF&W, includes species appearing on the official state or federal list of endangered or threatened species, high and moderate value deer wintering areas, and high and moderate value waterfowl and wading bird habitats.

Before conducting any activities in, on, or over significant wildlife habitats, a National Resources Protection Act (NRPA) permit must be obtained. Activities include construction, repair, or alteration of any permanent structure; dredging, bulldozing, removing or displacing soil, sand, or vegetation; and drainage or filling. The standard for protecting significant habitats highlights mitigation and compensation. Actions must be taken to A) avoid negative impacts on habitats, B) minimize the impacts if unavoidable, C) restore or rehabilitate impacted habitats, D) reduce an impact over time, or E) replace the affected habitat.

Due to Brighton's rural nature and vast expanses of privately owned working forest land, there have been minimal surveys done to document important information such as deer

wintering areas, rare or exemplary natural communities, or the presence of endangered species. This lack of information does not mean that these do not exist in Brighton; they are just currently undocumented. And, due to the expanses of unbroken habitat, the likelihood of their existence is significantly increased.

Brook Trout Habitat

Maine supports the most extensive distribution and abundance of wild brook trout (*Salvelinus fontinalis*) in their native range within the United States; more than 1,200 lakes and ponds are managed for brook trout, of which approximately 60 percent are sustained by natural reproduction. In addition, brook trout occur in an estimated 22,248 miles of stream habitat, the vast majority of which are wild.

Although brook trout populations are declining across their historic range within the United States (Maine to Georgia), a 2006 range-wide assessment by the Eastern Brook Trout Joint Venture found that Maine is the only state with extensive, intact populations of wild, self-reproducing brook trout in lakes and ponds, including some lakes over 5,000 acres in size. Lake populations of brook trout are intact in 185 subwatersheds (18 percent) of their historic range in Maine, and only six intact watersheds throughout the 16 other states. Maine is the last true stronghold for stream-dwelling populations of wild brook trout, supporting more than twice the number of intact subwatersheds as the other 16 states in the eastern range combined.

In Brighton, there are several streams documented by BwH that are wild brook trout habitat. They include the stream running out of Mayfield Pond (**is there a name for this stream?**) and Otter Pond, the area in and around Bryant Bog, and the East Branch of Wesserunsett Stream, as well as the associated tributaries to it.

Undeveloped Habitat Blocks, Connectors, and Conserved Land

There is a distinct, direct relationship between the quantity and variety of wildlife and the size of their habitat. Of course, there is urban wildlife such as skunks and mourning doves that do not require significant portions of land to thrive. However, many other types of animals are much less conspicuous and depend upon unbroken stretches of forest for survival. As roads, farms, and houses intrude on the habitats of these creatures, the large habitat blocks become fragmented, displacing the wildlife that relies on them.

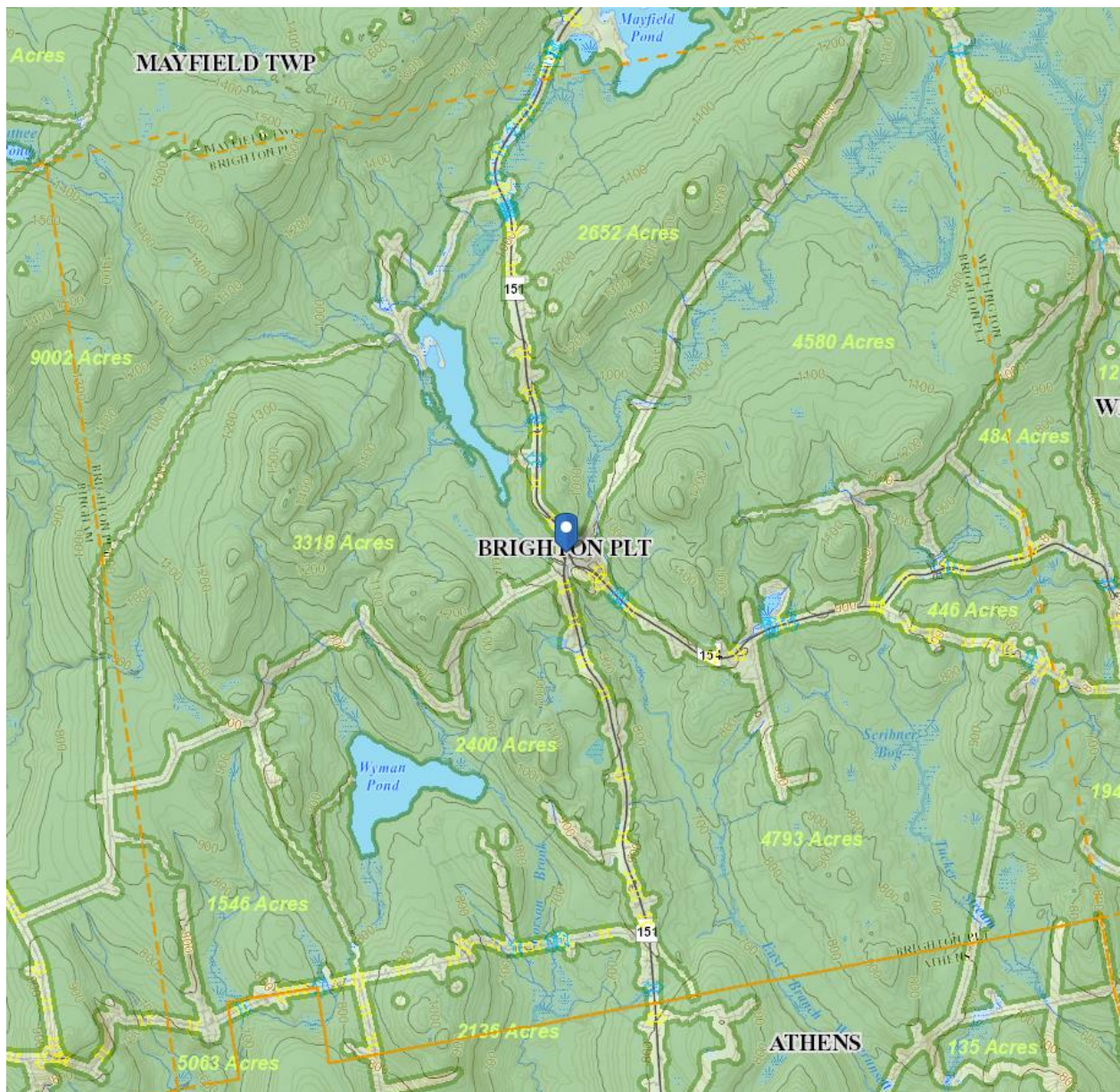
Development in rural areas often causes these fragmentations, reducing the land's value as wildlife habitat. Wildlife travel corridors linking individual habitat blocks together are critical to accommodate animal movement. Ensuring wildlife travel corridors helps preserve the region's biodiversity and maintains rural community character. Limiting development at the edges of unfragmented habitat also helps maintain environmental integrity by giving forest-dwelling creatures a natural buffer.

The Beginning with Habitat program maps these unfragmented habitat blocks. The BwH maps include information such as who owns the habitat block and how it is conserved

(federally protected, state protected, municipally owned and protected, or through conservation easement). The **Critical Natural Resources Map** in the Appendix shows these unfragmented blocks, as well.

Of Brighton's approximately 25,152 acres of land area, roughly ##### is owned by Weyerhaeuser, the timber company giant. Essentially, what this means is that large swaths of working forest account for unfragmented blocks of land in Brighton without formal conservation or preservation status.

FIGURE 3: UNFRAGMENTED HABITAT BLOCKS



Source: *Beginning with Habitat*

Figure 3 Highlights:

- The yellow connectors between the blocks mean there are less than 2,000 vehicle trips a day in that area.
- The blue connectors in riparian habitat also mean less than 2,000 vehicle trips a day.
- Most of Brighton is large, unfragmented habitat blocks.

Regulatory Protections

In addition to state and federal standards to protect water quality, Brighton's Land Use Zoning Ordinance, written in 1995, includes language to provide further protection of natural and water resources (see Existing Land Use chapter for more information). The Land Use Zoning Ordinance includes Shoreland Zoning requirements that are out of date and need updating to reflect the 2015 standards in the Chapter 1000 Guidelines. Brighton has contracted with KVCOG to perform the necessary update to the Land Use Zoning Ordinance after the completion of the Comprehensive Plan.

The Land Use Zoning Ordinance designates five zoning districts for the purpose of protecting water resources:

- General Development District
- Residential Development District
- Shoreland Development District
- General Management District
- Protection District

Of these districts, Shoreland Development, General Management, and Protection Districts are associated with natural resource protection. The purposes of each district are explained below.

The **General Development District** (D-GN on the Brighton Plantation Zoning Map) comprises the area where present and future residential, commercial, industrial and other significant development are considered to be the most desirable in terms of road access, economic viability, concentration of present development and retention of natural character in the remainder of the community.

The purpose of the **Residential Development District** (D-RS on the Brighton Plantation Zoning Map) is to set aside certain areas for single family residential uses so as to provide residential activities apart from areas of commercial and industrial development. The intention is to encourage the concentration of residential type development in areas which are appropriate for that use and prevent development in such areas which are incompatible with residential uses.

The purpose of the **Shoreland Development District** (D-SL on the Brighton Plantation Zoning Map) is to regulate residential and recreational development and other uses so

that the development or use will not degrade the waters, recreational potential, fishery habitat, or scenic character in the shoreland areas suitable for development.

The D-SL district extends 250 feet from the normal highwater line of waterbodies. Permits for campsites and non-permanent docking or mooring facilities can be obtained from the Code Enforcement Officer; other allowed land uses require a Conditional Use Permit from the Planning Board. All Conditional Use Permits must conform to Article 4- Performance Standards.

Generally, the minimum lot size is one acre; however, the Land Use Zoning Ordinance reserves the right to require a larger lot size, depending on soil type and conditions. Structures are required to be set back 100 feet from the normal high water line and 25 feet from side and rear lot lines. Maximum allowable lot coverage is 20 percent.

The purpose of the **General Management District** (M-GN on the Brighton Plantation Zoning Map) is to permit forestry and agricultural management activities to occur with minimal interference from unrelated development. In addition, it provides protection of the food supply for wildlife that inhabit the forested areas of the plantation.

Included in the General Management District are areas which do not qualify for inclusion in any other district.

A permit from the Code Enforcement Officer is required for the erection of buildings used primarily for agricultural or forestry management purposes, or accessory structures and uses. All other allowed uses require a Conditional Use Permit from the Planning Board.

The purpose of the **Protection Districts** (denoted as P- on the Brighton Plantation Zoning Map- P-WL for example) are to regulate land uses, to protect the public health, safety and welfare, and to protect sensitive and significant resources such as water bodies, flowing streams, wetlands, floodplains and shoreland. This protection is intended to maintain water quality; and scenic and recreational values; to protect plants, fish, and wildlife habitats; to minimize the economic and human costs of floods; and to maintain the groundwater table and ground water recharge and discharge areas.

These following areas are included in the Protection District designation:

- All shoreland of major standing waters designated on the Brighton Plantation Zoning map as P-GP with a width of 250 feet from the normal high water mark.
- All shoreland of minor flowing water designated on the Brighton Plantation Zoning Map as P-SL2 with a width of 75 feet from the normal high water mark.
- Deer wintering areas designated on the Brighton Plantation Zoning Map as P-FW.
- Wetlands designated on the Zoning Map as P-WL, including beds or rivers, streams, and lakes.
- Floodplains designated on the Zoning Map as P-FP.

The only type of permit that can be issued from the Code Enforcement Officer is for a non-permanent dock or mooring facility. All other allowed land uses require a Conditional Use Permit issued after review by the Planning Board.

All structures permitted in the Protection District require a setback of at least 75 feet from the normal high water mark (not included structures that require direct access to the water for operational necessities).

All Conditional Use Permits must conform to Article 4- Performance Standards.

Brighton Plantation strives to adequately protect natural resources by providing appropriate locations throughout town intended for commercial, industrial, and residential, as well as providing appropriate districts for recreational endeavors. These district designations should serve to direct certain development to districts where it can be accommodated and away from sensitive areas or areas of critical natural resources.

Brighton's Land Use Zoning Ordinance is the first line of protection for watersheds, water bodies, sensitive natural areas, and water quality. As such, when this Ordinance is updated it should include standards, such as Best Management Practices (BMPs) for construction to reduce phosphorus run off, and Low Impact Development (LID) design criteria (*LID Guidance Manual for Maine Communities, Approaches for Implementation of Low Impact Development Practices at the Local Level, 2007*). LID describes land planning and engineering design approaches to manage stormwater runoff that mimics natural processes, resulting in the infiltration, evapotranspiration, or use of stormwater to protect water quality and associated aquatic habitats.

To preserve and protect water quality, it is imperative that the Land Use Zoning Ordinance is reviewed and updated regularly. Regular updates will ensure the most current standards and practices are included, providing the utmost protection to Brighton's abundant natural resources.

Local and Regional Coordination

At present, Brighton Plantation has limited formal local or regional coordination efforts related to natural resource protection. Most of the land within the plantation is privately owned by large timber companies, and no land is currently under formal conservation easement or land trust protection. While the town does not have official partnerships with land trusts or watershed organizations, there is opportunity for future collaboration, particularly given Brighton's significant natural resources and proximity to shared watersheds.

Recreational and community coordination does exist in some forms. Brighton shares its solid waste disposal facility with the neighboring unorganized territory of Kingsbury, and participates in youth recreation programs (such as swimming and sports leagues) with Athens and other nearby towns where local children attend school. The town also works

informally with local snowmobile clubs to support access and trail maintenance across both public and private lands.

As the town continues to update its land use regulations and comprehensive plan, it may consider building new partnerships with regional conservation groups, watershed coalitions, or state resource agencies to support long-term protection of Brighton's forests, wetlands, and waterbodies.

Analysis

- Brighton Plantation consists of approximately 25,152 acres of land area and approximately 448 acres of water.
- Scenic areas are mostly situated near the plantation's great ponds and mountain tops i.e. Wyman Pond and Kelly Mountain
- There are three significant aquifers in Brighton.
- There are numerous rivers, streams, ponds, lakes, wetlands, and other waterbodies in Brighton.
- All rivers and streams in Brighton are classified as either Class A or Class B waterbodies.
- There are six watersheds in Brighton. The Higgins Stream watershed is part of the much larger Great Moose Lake Watershed which spans across several counties.
- There are an abundance of high quality wetlands throughout Brighton.
- Vernal pools have yet to be documented and mapped in Brighton.
- None of Brighton's Great Ponds meet the GPA waterbody classification.
- All lakes and ponds that had available water quality data were on slightly above state average.
- The biggest threats to Brighton's water quality are: phosphorus runoff from poorly maintained gravel roads and driveways, aging or failing septic systems near shoreland areas, historical industrial practices such as outdoor oil changes and unregulated waste disposal, legacy salt storage issues, and potential contamination from past sludge spreading on timberland.
- The municipal landfill is a known radiation site, though it has been closed since 1996.
- Minimal information on wildlife habitat in Brighton was available.
- Brighton consists of several large blocks of unfragmented habitat, as do the surrounding towns.
- The Land Use Zoning Ordinance divides the town into five land use districts; three of which are aimed at natural resource protection.
- The Land Use Zoning Ordinance will be updated upon the completion of the Comprehensive Plan update.
- Brighton Plantation has minimal regional coordination, limited primarily to shared services like solid waste disposal with Kingsbury and recreational programming with neighboring towns such as Athens.