

Province Lake Watershed Municipal Ordinance Review: Effingham & Wakefield, New Hampshire and Parsonsfield, Maine



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Municipal Ordinance Review
Effingham and Wakefield, New Hampshire and Parsonsfield, Maine

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INTRODUCTION

Land use and zoning ordinances are among the most powerful tools municipalities can use to protect their natural resources. FB Environmental Associates (FBE) is currently completing a Watershed-Based Management Plan (WBMP) for Province Lake's 3,904 acre watershed. Effingham, NH contains the largest portion of the watershed (1,738 acres), followed by Parsonsfield, ME (1,183 acres), Wakefield, NH (670 acres), Newfield, ME (152 acres) and Ossipee, NH (161 acres).

A component of the WBMP (Task III-E – Determine Actions to Reduce Pollutant Loads) includes an ordinance review for the Towns of Effingham (Effingham, 2013) and Wakefield (Wakefield, 2012), NH and Parsonsfield, ME (Parsonsfield, 1981, 2012) . To determine how the Towns of Effingham, Wakefield and Parsonsfield can improve the means by which they can protect surface water resources, FBE has conducted a review of the towns' existing land use and zoning regulations. Note that Wakefield is referred to in this review as FBE conducted a separate ordinance review for the town in 2011-2012 and new amendments were approved to the site plan and subdivision regulations in 2013.

This report provides a review of the standards within the existing zoning ordinances within the project towns, and is predominantly focused on the Province Lake watershed. Specific recommendations are provided within this report to inform the towns about how they can improve land use and zoning ordinances so that they may better protect Province Lake and other surface waters. This report complements the Water Quality Analysis (FBE, 2014), Lake Loading Response Model (FBE, 2014b) and Build-out Analysis (FBE, 2014c) reports completed as part of the Province Lake WBMP project.

These suggestions are targeted at improving the regulations by enhancing protections for water quality, and by including references to the most recent and relevant supplementary documents. The suggestions are presented in context and each suggestion is presented independent of the others, and should be considered on a case by case basis. By considering these recommended changes, the towns' Planning Boards will take an important step toward enhancing protections for their water resources.

PROJECTED DEVELOPMENT

The build-out analysis for the Province Lake watershed provides estimates about the potential for new residential development, including the number of new buildings and the amount of land area that could be developed in the watershed based on current zoning standards (see FBE, 2014). Based on these current zoning standards, the build-out analysis estimates that 886 buildings could be added by 2060, affecting the 2,347 acres of buildable land in the watershed.

SUMMARY OF NEW HAMPSHIRE AND MAINE SHORELAND ZONING STANDARDS

Province Lake and its associated inlets and outlets are regulated under state-mandated shoreland zoning standards set forth by both New Hampshire and Maine. The sections below outline each state's standards. Appendix A contains a summary of these regulations.

NEW HAMPSHIRE

According to RSA 483-B, or the Shoreland Water Quality Protection Act (SWQPA), the protected shoreland pertains to all of the land within 250 feet from the shoreline (reference line) of the surface water, which includes:

- All lakes, ponds and artificial impoundments greater than 10 acres in size.
- 4th order and higher rivers and streams and designated river segments.

Development within and alterations to the protected shoreland are regulated by the SWQPA, but municipalities can institute more stringent regulations (NHDES, 2012). The Shoreland Program at the New Hampshire Department of Environmental Services (NHDES) is responsible for reviewing shoreland permit applications and responding to written complaints documenting possible violations of the SWQPA. As within most State agencies today, the Shoreland Program has limited staff resources available to enforce regulations such as the SWQPA. Therefore, the Shoreland Program depends on local officials and residents, such as code enforcement officers and engaged citizens, to report potential violations. Such reports aid the Shoreland Program in enforcing the regulations within the SWQPA.

The New Hampshire State Statutes within Chapter 483-B are available in full online at: www.gencourt.state.nh.us/rsa/html/nhtoc/nhtoc-l-483-b.htm.

Impervious Surface Area Limitation

If a homeowner or developer wishes to exceed 30% impervious surface coverage of the area of the lot within the protected shoreland, a stormwater management system designed and certified by a professional engineer that will not concentrate stormwater runoff or contribute to erosion must be implemented and if any grid segment within the waterfront buffer does not meet the required 50 point tree, sapling, shrub and groundcover score, each deficient grid segment must be planted with additional vegetation to at least achieve the minimum required score. If a homeowner or developer wishes to exceed 20% impervious area, a stormwater management plan must be implemented to infiltrate increased stormwater from development (NHDES, 2012).

Septic System Setbacks

Setback requirements for all new septic systems are determined by soil characteristics (NHDES, 2012).

- 75 feet for rivers and areas where there is no restrictive layer within 18 inches and where the soil down gradient is not porous sand and gravel (perc > 2 min.).
- 100 feet for soils with a restrictive layer within 18 inches of the natural soil surface.
- 125 feet where the soil down gradient of the leachfield is porous sand and gravel (per rate equal to or faster than 2 min/in.).

Natural Woodland Buffer Limitations

At least 25 percent of the area between 50 feet and 150 feet from the reference line must be maintained in an unaltered state (NHDES, 2012). Within 50 feet from the reference line, a waterfront buffer must be maintained. Within the waterfront buffer, tree coverage is managed with a 50 X 50 foot grid and point system. Trees and saplings may be removed provided the sum score of the remaining trees, saplings, shrubs and groundcover within the affected grid segment is at least 50 points. No natural ground cover shall be removed except for a footpath to the water that does not exceed 6 feet in width and does not concentrate stormwater or contribute to erosion. Natural ground cover must remain intact. No cutting or removal of vegetation below 3 feet in height (excluding previously existing lawns and landscaped areas). Stumps, roots, and rocks must remain intact in and on the ground unless specifically approved by the NHDES (NHDES, 2012).

Primary Building Setback

All primary structures must be set back at least 50 feet from the reference line. Towns may maintain or enact greater setbacks.

MAINE

The Mandatory Shoreland Zoning Act, 38 MRSA, Section 435-449 requires all municipalities to adopt, administer, and enforce ordinances which regulate land use activities within the “shoreland zone”, which includes all land within:

- 250 feet of the normal high-water line of any natural pond over 10 acres (i.e., great pond), any river that drains at least 25 square miles, and all tidal waters and saltwater marshes;
- 250 feet of a freshwater wetland over 10 acres (except “forested” wetlands)
- 75 feet of a stream. Only outlet streams of great ponds, and streams below the confluence of two perennial streams depicted on a USGS topographic map are required to be zoned.

Municipalities are required to adopt local shoreland zoning ordinances that are at least as restrictive as the minimum standards contained in the Guidelines for Municipal Shoreland Zoning Ordinances developed by the Maine DEP, except in instances where a municipality can document the need for a different set of standards. A code enforcement officer is appointed

annually in each municipality to assist with administration and enforcement of the locally adopted shoreland zoning ordinance.

The Maine Mandatory Shoreland Zoning regulations are available online at www.maine.gov/dep/land/slz/#rule.

Impervious Surface Area Limitation

The total area of a lot covered by structures, driveways, parking areas, decks, patios, and other non-vegetated surfaces is limited to 20% in shoreland areas. In General Development Districts which are on tidal waters or rivers that do not flow into great ponds, and in Commercial Fisheries and Maritime Activity districts, the limit is 70%.

Septic System Setbacks

All septic must be installed in conformance with the State of Maine Subsurface Wastewater Disposal Rules (Available online at www.maine.gov/dhhs/mecdc/environmental-health/plumb/rules.htm). New systems, excluding fill extensions, must be constructed no less than 100 horizontal feet from the normal high-water line of a perennial water body. (The minimum setback distance for a new septic system may not be reduced by variance.) In addition:

- Clearing or removal of woody vegetation necessary to site a new system and any associated fill extensions, shall not extend closer than seventy-five (75) feet, horizontal distance, from the normal high-water line of a water body or the upland edge of a wetland.
- A holding tank is not allowed for a first-time residential use in the shoreland zone.

Natural Woodland Buffer Limitations

In general, in the first 75 feet (i.e., buffer strip) from the normal high-water line or the upland edge of a wetland, 40% percent of the volume of trees with a dbh (diameter at breast height – 4.5 feet above ground) of four inches or more in diameter can be removed in any ten year period. However, no clear-cut openings (openings in the forest canopy greater than 250 square feet) are permitted. The cutting must be done such that a well-distributed¹ stand of trees and other vegetation remains. Adjacent to great ponds and rivers flowing to great ponds, the buffer strip extends for a distance of 100 feet from the normal high-water line.

Beyond the buffer strip, vegetative cutting limitations are less restrictive. In this area cleared openings are permitted provided that such clearings do not exceed 25% of the lot area, or ten thousand square feet, whichever is greater. In total, however, no more than 40% of the volume of trees can be removed in any 10-year period from the shoreland zone.

¹ A well-distributed stand of trees and other vegetation is determined by a "point system". The system assigns values to trees down to two (2) inches in diameter, requires a certain total value of trees be maintained in each 25-foot by 50-foot square rectangular (1250 square feet) area within the buffer strip.

Primary Building Setback

All structures, except those which are water dependent, must be set back from the normal high-water line of a water body (including tributary streams) or the upland edge of a wetland. In most districts that are on a great pond or river flowing into a great pond, the setback is 100 feet. There are sections of some specially designated rivers in northern and Downeast Maine where the setback is 125 feet for new principal structures. A 75 foot setback applies on all other water bodies, streams, and wetlands. In the General Development I district, the minimum setback is 25 feet, while in the Commercial Fisheries/Maritime District there is no setback requirement.

TOWN ORDINANCES

The sections below compare ordinances between the three towns and sets forth regulatory recommendations and development techniques that can be used to protect water quality. Appendix B contains a table summarizing selected ordinances/development practices of the three towns.

Percent Lot Coverage

Impervious surfaces beyond a building's footprint, such as parking lots, driveways, and sidewalks increase the volume of stormwater runoff when it rains, as well as act as conduits for pollutants. Stormwater is a major environmental stressor and one of the leading causes of declining water quality (Shuster et al., 2008). When rainwater flows over impervious surfaces it picks up a suite of pollutants including sediments, oils, and nutrients such as phosphorus and nitrogen which in turn end up in streams, rivers, lakes, or the ocean.

The connection between increasing amounts of impervious cover within a watershed and degradation of water quality is well established (Peterson et al., 2009). Extensive science and engineering research shows that watersheds with high percentages of impervious cover have direct, negative impacts on hydrology and water quality (Flinker, 2010). Based on a review of hundreds of studies, Tom Schueler and others at the Center for Watershed Protection in Maryland developed what they called the "Impervious Cover Model." This model is based on the average percentages of impervious cover at which stream water quality declines. The model displays that streams become impacted when their watersheds have 10–25% impervious cover, and virtually all streams are impaired in watersheds with greater than 25% impervious cover (Schueler, 2000).

Effingham does not have lot coverage restrictions other than that which is mandated under the SWQPA. Wakefield's Site Plan Regulations call for not more than 45% building coverage and no more than 80% impervious coverage per buildable area (50% in its Aquifer Protection zone). Parsonsfield, however, allows for only 20% lot coverage in its Forest and Farm and Shoreland zones and 30% coverage in its Rural Residential zone. It may prove beneficial in protecting the

water quality of Province Lake and other surface waters if Effingham and Wakefield were to adopt similar lot coverage standards as those of Parsonsfield.

Also, requiring that lots in these zones with 20% or more imperviousness have implemented LID (discussed below) may help to minimize water quality impacts to Lake Wentworth and its tributaries. An example of where this has been implemented is the Town of New Durham, New Hampshire which requires all developments which will have more than 20% impervious cover to demonstrate that their stormwater management system will remove 80% of the average annual load of total suspended sediment (TSS), and 40% of the total phosphorus load (New Durham, 2013).

Building Setbacks (Shoreland Zones)

The land adjacent to a lake, pond, river, or stream, when left in its natural state can play an important role in filtering runoff, shading streams and rivers, protecting banks and shorelines, and reducing erosion. Some of the benchmark standards that should be built into ordinances for protecting water quality within the shoreland zone include: mandatory setbacks for primary structures, mandatory buffers between development and the waterbody, and impervious cover restrictions.

Effingham and Wakefield's required setback of 50' from Province Lake follows the State of New Hampshire's minimum requirement as dictated by the Shoreland Water Quality Protection Act (SWQPA). Parsonsfield must follow the minimum standards set forth by Maine's Mandatory Shoreland Zoning Act, which calls for a 100' setback. The Maine setback requirements have proven to be very effective (Merrell et al., 2013) and it may therefore be prudent for Effingham to adopt Parsonsfield's standards. More information on Maine's shoreland zoning standards can be found in *Maine Shoreland Zoning: A handbook for shoreland owners*, available online at: www.maine.gov/dep/land/slz/citizenguide.pdf.

Wetland Buffers

Wetlands provide many ecological, economic, and social benefits. They provide habitat for fish, wildlife, and a variety of plants. They are nurseries for many saltwater and freshwater fishes and shellfish of commercial and recreational importance. Wetlands are also important landscape features because they hold and slowly release flood water and snow melt, recharge groundwater, recycle nutrients, and provide recreation and wildlife viewing opportunities for Province Lake's residents and visitors (EPA, 2001).

The State of New Hampshire, under RSA 482-A regulates a 100 foot buffer area on designated prime wetlands. The protections of all other wetlands within the state are under the jurisdiction of the municipality. Under the administrative rules Env-Wt 700, individual municipalities may elect to designate wetlands as "prime-wetlands." After a thorough analysis, and a submission from the municipality, DES may choose to designate the wetland as a prime wetland (NHDES, 2012b).

Since the State of New Hampshire standards only apply to “prime” wetlands, Effingham has gone above the states’ minimum standards for wetland protections (NH DES, 2014) in that it requires buffer areas for all wetlands. The buffers are based wetland size and connectedness to surface waters (Table 1). Effingham has also designated certain wetland areas as “Exemplary” (including those associated with Northwest Province Lake, South River Marsh, and the Upper South River) and has instituted a 150’ buffer. Conversations with the town’s code enforcement officer indicated that the town has extended the waters protected by the Mandatory Shoreland Zoning Act to the entire length of the South River (which is bordered by wetlands). Other wetlands within the town are also afforded 100 foot building setbacks as dictated by the town’s subdivision regulations. Wakefield has the least protective wetland buffers, extending only 30 feet with a 20-foot no disturbance area.

Table 1. Effingham wetland buffers.

Wetland/Surface Water Type	Buffer (Feet)
Wetlands contiguous to surface waters	100
Isolated wetlands not contiguous to surface waters <3,000 sq. feet	25
Isolated wetlands not contiguous to surface waters ≥3,000 sq. feet	50
Exemplary wetlands	150
Lakes and Ponds of less than ten acres, Marshes, Bogs, Vernal Pools	100
Intermittent and Seasonal streams not contiguous to surface waters	25
Intermittent and Seasonal streams contiguous to surface waters	50

For additional protection of wetlands and their water quality, Effingham might wish to increase all buffers currently below 100 feet to 100 feet and Wakefield may also wish to increase their buffers to 100 feet. Note however that this buffer size is based on protecting water quality, *not* wildlife (pool-breeding amphibians in particular) that may inhabit some of the wetlands present in the Province Lake watershed. For guidelines on best development practices in regard to pool breeding amphibians see Calhoun and Klemens (2002) *Best Development Practices Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States* available online at: www.umaine.edu/vernalpools/PDFs/Best%20Development%20Practices%20-%20-%20Conserving%20Pool-breeding%20Amph.pdf.

Conservation subdivisions

A conservation subdivision (a.k.a., open space subdivision, cluster subdivision) is a residential subdivision in which a substantial amount of the site remains undeveloped and is permanently protected as open space (NH DES, 2008). Homes are constructed, typically in a clustered fashion, on the remaining portion of the site. Within the Province Lake Watershed, conservation

subdivisions could be encouraged or mandated as this type of development has been shown to have less negative impact on open space, wildlife and their habitat, and water quality than unlimited outward expansion of low-density development into undeveloped areas (i.e., sprawl) (Hawkins, 2014).

Effingham has a strong Open Space Conservation Subdivision ordinance in that its Planning Board may require an applicant to use an Open Space/Conservation Subdivision design if the property is 10 acres or more and contains certain features. Examples include prime agricultural land, rare, threatened, or endangered species or exemplary natural communities, or proximity to a great pond or perennial stream. The ordinance is progressive in that it calls for a 50% minimum of the overall property to be set aside as Conservation Area, and that these areas should be connected to nearby conservation areas, wherever possible. Wakefield encourages conservation subdivisions if a given parcel contains certain natural features (e.g., agricultural land, endangered species) and mandates that a minimum 50% of *buildable* land must be set aside as open space.

One issue noticed with the Effingham ordinance is in Section 1806 (Ownership and Protection of Conservation Areas). Specifically, Section D states that conservation land can be conveyed to home owners associations or corporations. Homeowners associations and development corporations often don't have the expertise (or the interest) in managing these conservation areas and therefore should be removed from the list of acceptable entities. Parsonsfield subdivision regulations (Section 11.16) also allow for the conveyance of land to homeowners associations; removal of this clause might prove beneficial.

Also, while the current standards within Effingham's and Wakefield's ordinances are strong, the Towns could consider increasing the overall amount of land that is to be designated as open space beyond 50%. In regard to Parsonsfield, the town currently does have a Cluster Development ordinance, but its open space requirements are minimal in that "no less than 30% of the reserved open space shall be usable open space". The town's natural resources would likely benefit from the adoption of an ordinance similar to those of Effingham and Wakefield.

Low Impact Development

Low impact development (LID) refers to a wide range of techniques specifically designed to limit the adverse effects that poorly planned development can have on water quality. Some examples of LID techniques include minimization and/or disconnection of impervious surfaces, development design that reduces the rate and volume of runoff, and reduction of the pollutant loads within runoff. Common types of techniques include, but are not limited to; bioretention cells, tree box filters, infiltration trenches, rain barrels, and rain gardens. Municipalities can help protect water quality by mandating the use of LID in new and renovated developments. Since these practices are relatively new, most municipalities do not currently mandate the use of LID. Neither Effingham nor Parsonsfield mention LID in their zoning or conservation subdivision ordinances. Both towns should consider incorporating language into their ordinances mandating the use of LID techniques for developments which have the greatest potential to impact surface

waters. This could include mandating that LID techniques be used for all new construction. More information on LID techniques can be found on the Center for Watershed Protection's website: www.cwp.org and within the New Hampshire Homeowners Guide to Stormwater Management available through NH DES: www.des.state.nh.us/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf.

Several other New Hampshire communities have placed language for the use of LID requirements into their zoning ordinances to ensure stormwater pollutant removal. For example, the Town of Newbury, New Hampshire discusses LID in their Stormwater Management ordinance and state that the use of LID techniques are preferred and shall be implemented to the maximum extent possible (Newbury, 2013).

Summary

This ordinance review for the Towns of Effingham, Wakefield and Parsonsfield analyzed the standards within the towns' ordinances pertaining to percent lot coverage, building setbacks, wetland buffers, conservation subdivisions, and low-impact development. This review provides the towns with information about how they can improve standards pertaining specifically to these topic areas. This was *not* a full-scale ordinance review. A full-scale ordinance review would require additional time and effort and would be an ideal project task for an implementation grant and would include directives for working with the municipal planning boards to recommend changes. Therefore, ordinance components such as site plan review regulations, road and right of way standards, minimum lot sizes, minimum shore frontage per lot, and others, which have the potential to impact surface water quality, should also be carefully reviewed in the future.

Aside from their intrinsic value, the natural resources within the town, including Province Lake and the streams in the watershed, help to fuel the local economy. Ongoing efforts to protect and improve water quality is therefore an important consideration for the long-term sustainability of Effingham and Parsonsfield's local economy, and can be accomplished by the ongoing efforts of an active planning board, an informed and engaged citizenry, and regulations that allow well planned development to occur with the least impact to the land and water in the town.

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Appendix A. Summary table of New Hampshire and Maine shoreland zoning regulations.

	New Hampshire	Maine
Area Encompassed Under Shoreland Zoning	250' from shoreline of rivers, lakes, and ponds >10 ac. Fourth order and higher rivers and streams and designated river segments.	250' from high-water line of any pond >10 ac., any river draining ≥25 sq. miles, all tidal waters and saltwater marshes. 250' from freshwater non-forested wetlands >10 ac. 75' from outlets of great ponds, and streams below the confluence of two perennial streams depicted on USGS topo maps.
Impervious surface area limits	>20% impervious cover requires a stormwater management plan. >30% cover requires a stormwater management system designed and certified by a professional engineer.	20% limit in shoreland areas
Septic system setbacks	75 feet for rivers and areas where there is no restrictive layer within 18 inches and where the soil down gradient is not porous sand and gravel. 100 feet for soils with a restrictive layer within 18 inches of the natural soil surface. 125 feet where the soil down gradient of the leach field is porous sand and gravel.	At least 100' from the high-water mark of a perennial water body.
Natural Woodland Buffer	Within 50 feet of reference line a limited amount of tree and saplings may be removed (grid and point system) but vegetation <3 feet in height must remain intact. At least 25% of the area between 50-150 feet must be maintained in an unaltered state.	Within 75 feet of the reference line (100 feet for great ponds and rivers), 40% of the volume of trees ≥4 in. dbh may be removed in a ten-year period. Beyond the 75 or 100 feet, clearings may not exceed 25% of lot area or 10,000 sq. feet. No more than 40% of volume of trees can be removed in any ten-year period.
Primary Building Setback	50 feet from the reference line for primary structures.	100 feet for most districts on a great pond or river flowing into a great pond. A 75 foot setback applies to all other waterbodies, streams, and wetlands.

Appendix B. Summary table of reviewed town ordinances/development techniques.

	Effingham	Wakefield	Parsonsfield
Percent lot coverage (Shoreland)	Follows state standard - can exceed 30% but requires stormwater management system	Follows state standard - can exceed 30% but requires stormwater management system	Follows state standard - no more than 20%
Building Setback (Shoreland)	50 feet (State standard)	50 feet (State standard)	100 feet (State standard)
Wetland Buffers	25-150 feet (see Table 1)	30 feet (20-foot no disturbance area)	100 feet
Conservation Subdivisions	Allowed if property is >10 ac. and contains certain features (e.g., prime agricultural land, endangered species). Requires $\geq 50\%$ of land to be conserved.	Encouraged if parcel contains certain features (e.g., Agricultural land, steep slopes, lake frontage). Minimum 50% <i>buildable</i> area must be designated as open space.	No less than 30% of reserved open space shall be useable open space
Low Impact Development (LID)	Not mentioned in ordinances	Not mentioned in ordinances	Not mentioned in ordinances