

Natural Resources



NATURAL RESOURCES

Introduction

Patten is a rural community with freshwater streams and brooks and several small ponds. There are scattered fields dedicated to small agricultural activities. Patten contains a patchwork of forestland, shrub/scrubland, and wetlands. The water and forestlands provide an array of habitats that support abundant wildlife, wading bird and waterfowl habitat, candidate deer wintering areas, and two (2) rare plant communities.

Patten's natural resources contribute significantly to its quality of life. These resources provide open spaces for wildlife and recreational opportunities such as fishing, boating, snowmobiling, hunting, canoeing, hiking, cross-country skiing, and some of the best views of Maine's highest peak, Mount Katahdin.

Patten is located in northeastern Penobscot County on the Aroostook County line and is bordered by Crystal to the east, Mount Chase to the north, T4 R7 to the west, and Stacyville to the south. Total area is 38.2 square miles (24,448 acres) of which 38.1 square miles (24,384 acres) is land and 0.06 square miles (38.4 acres) is water. Patten can be characterized as moderately rolling terrain with areas of steep slopes located to the south of Blackwell Bog and along Fish Stream. The highest elevation in town is approximately 870 feet above Mean Sea Level located just south of downtown on Route 11.

Soils

"Soil survey" is a general term for systematic examination of soils in the field and laboratory. It involves describing, classifying, and mapping soil types, and then interpreting their suitability for various uses such as residential, commercial, agricultural and recreational. The Soil Survey Office of the Natural Resource Conservation Service (NRCS) located in Bangor has analyzed the characteristics, behavior, distinctive properties and appropriate uses of each different soil type. This data can be found on-line at <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

These maps and data sheets are useful to Patten to help predict the sequence of development; develop future land use plans and create or update zoning; indicate areas where streets or sewers may be prohibitively costly; and identify where environmentally sensitive land should be protected. Individuals can learn problems or development costs associated with a piece of land and the advantage of one piece of land over another prior to purchase. The information will help answer whether the site can support a septic system, if the basement will always be wet, if there is a high potential for erosion, and the bearing capacity of the soil.

Soil survey maps do not eliminate the need for on-site sampling, testing, and the study of other relevant conditions (for example, pockets of different soils having completely different qualities may be present), but they are an important first step that should precede development decisions.

The following soil types are located in Patten:

Map Unit Symbol	Map Unit Name	Acres in PATTEN	Percent of PATTEN
BaB	Bangor silt loam, 2 to 8 percent slopes	1,547.6	4.1%
BaC	Bangor silt loam, 8 to 15 percent slopes	836.4	2.2%
BaD	Bangor silt loam, 15 to 25 percent slopes	46.1	0.1%
BnB	Bangor very stony silt loam, 0 to 8 percent slopes	484.8	1.3%
BnC	Bangor very stony silt loam, 8 to 15 percent slopes	395.0	1.1%
BnD	Bangor very stony silt loam, 15 to 25 percent slopes	352.7	0.9%
BrA	Burnham silt loam, frequently ponded, 0 to 3 percent slopes	5,143.6	13.7%
BxB	Biddeford-Scantic-Lamoine complex, 0 to 8 percent slopes, very stony	4.3	0.0%
CcC	Colton cobbly sandy loam, dark materials, 8 to 15 percent slopes	4.8	0.0%
CnB	Colton gravelly sandy loam, dark materials, 2 to 8 percent slopes	156.2	0.4%
CnC	Colton gravelly sandy loam, dark materials, 8 to 15 percent slopes	30.2	0.1%
CnD	Colton gravelly sandy loam, dark materials 15 to 25 percent slopes	3.9	0.0%

Map Unit Symbol	Map Unit Name	Acres in PATTEN	Percent of PATTEN
DaA	Daigle silt loam, 0 to 2 percent slopes	173.3	0.5%
DaB	Daigle silt loam, 2 to 8 percent slopes	1,095.7	2.9%
DaC	Daigle silt loam, 8 to 15 percent slopes	142.8	0.4%
DgB	Daigle stony silt loam, 2 to 8 percent slopes	120.6	0.3%
DgC	Daigle stony silt loam, 8 to 15 percent slopes	46.9	0.1%
DxA	Dixmont silt loam, 0 to 2 percent slopes	69.1	0.2%
DxB	Dixmont silt loam, 2 to 8 percent slopes	2,467.8	6.6%
DxC	Dixmont silt loam, 8 to 15 percent slopes	133.8	0.4%
DyB	Dixmont very stony silt loam, 2 to 8 percent slopes	1,772.4	4.7%
DyC	Dixmont very stony silt loam, 8 to 15 percent slopes	79.0	0.2%
HoB	Howland gravelly loam, 3 to 8 percent slopes	26.1	0.1%
HoC	Howland gravelly loam, 8 to 15 percent slopes	70.0	0.2%
HvB	Howland loam, 0 to 8 percent slopes, very stony	131.0	0.3%
HvC	Howland silt loam, 8 to 15 percent slopes, very stony	49.2	0.1%

Map Unit Symbol	Map Unit Name	Acres in PATTEN	Percent of PATTEN
HvD	Howland silt loam, 15 to 30 percent slopes, very stony	16.4	0.0%
Lk	Charles silt loam, 0 to 2 percent slopes, frequently flooded	58.0	0.2%
MbB	Madawaska very fine sandy loam, 0 to 8 percent slopes	50.3	0.1%
Md	Made land	15.5	0.0%
Mn	Mixed alluvial land	405.4	1.1%
MoB	Monarda silt loam, 0 to 3 percent slopes	752.8	2.0%
MrB	Monarda-Burnham complex, 0 to 3 percent slopes, very stony	2,840.4	7.6%
MsC	Monarda-Burnham complex, 0 to 15 percent slopes, extremely stony	53.0	0.1%
Pa	Peat and Muck	1,097.8	2.9%
PhB	Perham silt loam, 0 to 8 percent slopes	458.2	1.2%
PhC	Perham silt loam, 8 to 15 percent slopes	40.8	0.1%
PmB	Perham stony silt loam, 0 to 8 percent slopes	135.0	0.4%
PmC	Perham stony silt loam, 8 to 15 percent slopes	125.2	0.3%
PrC	Plaisted loam, 8 to 15 percent slopes, very stony	1,450.1	3.9%

Map Unit Symbol	Map Unit Name	Acres in PATTEN	Percent of PATTEN
PrE	Plaisted loam, 30 to 60 percent slopes, very stony	158.9	0.4%
Py	Podunk fine sandy loam, 0 to 3 percent slopes, occasionally flooded	14.2	0.0%
RaB	Red Hook and Atherton silt loams, 0 to 8 percent slopes	0.7	0.0%
RmC	Rock outcrop-Thorndike association, 3 to 15 percent slopes, very stony	42.9	0.1%
RmD	Rock outcrop-Thorndike association, 15 to 25 percent slopes, very stony	1,047.8	2.8%
Sa	Saco silt loam	337.8	0.9%
ThB	Thorndike channery silt loam, 0 to 8 percent slopes, rocky	6,363.4	17.0%
ThC	Thorndike channery silt loam, 8 to 15 percent slopes, rocky	2,467.3	6.6%
ThD	Thorndike channery silt loam, 15 to 25 percent slopes, very rocky	698.5	1.9%
ThE	Thorndike channery silt loam, 25 to 45 percent slopes, very rocky	31.3	0.1%
TkB	Thorndike silt loam, 0 to 8 percent slopes, very rocky	353.8	0.9%

Map Unit Symbol	Map Unit Name	Acres in PATTEN	Percent of PATTEN
TkC	Thorndike silt loam, 8 to 15 percent slopes, very rocky	256.0	0.7%
TvB	Thorndike-Winnecook complex, 3 to 8 percent slopes, rocky	505.3	1.3%
TvC	Thorndike-Winnecook complex, 8 to 15 percent slopes, rocky	988.1	2.6%
TvD	Thorndike-Winnecook complex, 15 to 35 percent slopes, very rocky	677.9	1.8%
W	Water bodies	132.1	0.4%
Wn	Winooski silt loam	30.3	0.1%

Source: NRCS, 2017

Specific information about the soils on a property can be obtained here:

- 1) <http://websoilsurvey.nrcs.usda.gov/app/> USDA Natural Resource Conservation Service Web Soil Survey site.
- 2) <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm> Soils for a property by its mailing address.
- 3) http://soils.usda.gov/survey/printed_surveys/state.asp?state=Maine&abbr=ME Archived County Soil Survey data

Watersheds

A watershed is the land area in which runoff from precipitation drains into a body of water. Patten is divided among several small watersheds. Much of the land area of Patten drains towards the Mattawamkeag River, which was the means by which the first settlers arrived in Patten. Development activities, such as house and road construction and timber harvesting, disturb the land that drains to a lake by streams and groundwater; thus, these activities can pollute the watershed.

Water Resources Conditions and Trends

Rivers, streams, great ponds, aquifers and wetlands are all considered water resources. Public and private wells that serve as public drinking water supplies are also the focus of the Town's water

resources inventory. Individual water resources were examined for ecological value, threats to quality or quantity and any documented issues related to water quality or invasive species. The Water Resources Map at the end of this section identifies the location of these resources in Patten.

Great Ponds

According to the Maine Department of Environmental Protection (MDEP), there is one Great Pond located in Patten; Wiley Pond which is undeveloped and remains in its natural state. This great pond does not appear on the Maine Department of Environmental Protection's list of watersheds most at risk from development due mainly to the fact that it is surrounded by private land used predominately for harvesting timber.

Developments occurring in watersheds that are on the list require additional standards for storm water runoff and site development. Keeping phosphorus laden sediments out of the ponds is the major objective of additional standards. The present level of development activity in the respective watersheds has not reached the point of damaging water quality in these ponds. Wiley Pond is described below based on a survey conducted by the Maine Department of Inland Fisheries and Wildlife (IF&W).

Wiley Pond

Wiley Pond is a small pond (32 acres) with a maximum depth of 19 feet and an average depth of 6.9 feet. Thermal stratification occurs in a small, deep basin of the pond, providing some potentially good brook trout water. However, the deeper portions of this basin are low in oxygen during the latter part of the summer. A small trout fishery exists, but is limited by the large amount of warm, shallow water and competition from other species. Lily pads are abundant in the 3 to 4-foot depths. The southwest shore and the northwest inlet are bordered by heath plants and have very muddy bottoms. The southwest inlet is spring influenced and has some gravel areas that may be utilized for spawning by trout, but it becomes very shallow during the summer months. Good spawning gravel and riffle areas are present in the outlet, but temperatures become critical for trout during the summer months. The spring seepage areas within the pond and in the southwest inlet are considered adequate to maintain the present trout fishery. There has been no water quality monitoring on this lake and no known invasive infestation, something that the Town wishes to maintain.

Wiley Pond is under general fishing regulations except that it is open to open water fishing from October 1 to November 30th and ice fishing in November. There is a daily bag limit of two (2) trout.

Other Surface Waters

According to the Maine Volunteer Lake Monitoring Program, there are two (2) additional surface waters located in Patten; Giles Pond and Potter Pond. Giles Pond (MIDAS 8512) is located just west of Route 11 (North Road) and is approximately 0.2 acres. There have been no water quality monitoring efforts on this water body, there is no known fishery, and no known invasive aquatic infestation.

Giles Pond is open to fishing only for persons under the age of 16 and restricted to two lines per person. Giles Pond is managed under general fishing regulations except that it is open to open water fishing from October 1 to November 30th and ice fishing in November but all trout, landlocked salmon and togue must be released alive at once.

Potter Pond (MIDAS 2300) is approximately 4 acres in size and is located west of the Happy Corner Road. There has been no water quality monitoring on this lake and no known aquatic infestation. Potter Pond is under general fishing regulations except that it is open to open water fishing from October 1 to November 30th and ice fishing in November but all trout, landlocked salmon and togue must be released alive at once.

Streams and Rivers

To assess what portion of Maine's rivers, streams and brooks meet the goal of the Clean Water Act; MDEP uses bacteriological, dissolved oxygen, and aquatic life criteria. All river and stream waters are classified into one of four categories, Class AA, A, B, and C as defined by legislation. Class AA is the highest classification with outstanding quality and high levels of protection. Class C, on the other end of the spectrum, is suitable for recreation and fishing yet has higher levels of bacteria and lower levels of oxygen.

The MDEP's, Division of Environmental Assessment collects data on Maine's streams and rivers. According to MDEP the following brooks and streams are located in Patten: Swift Brook (Middle Branch and East Branch), Fish Stream, Rowe Brook, Peavey Brook, Weeks Brook and the Molunkus Stream (West and East Branches). All but Fish Stream have an A classification while Fish Stream is a B classification.

Class A waters are the second highest classification given by the MDEP. Class A waters are suitable for drinking water after disinfection and for fishing, recreation in or around the water, industrial processing and cooling, hydroelectric power generation, and as habitat for fish and other aquatic life. No discharges to these waters are allowed that have a quality lower than the receiving waters. There are no non-attainment brooks or streams listed in the report located in Patten which is not surprising considering the absence of development pressure adjacent to most of these waters. It should also be noted that timber harvesters continue to implement best management practices in their operations, which has improved the overall impact of those activities in the watershed.

Class B waters indicate that the water quality is "suitable for the designated uses of drinking water supply after treatment; fishing; recreation in and on the water; industrial process and cooking water supply; hydroelectric power generation, except as prohibited under Title 12, section 403; and navigation; and as habitat for fish and other aquatic life. The habitat shall be characterized as unimpaired." [1985, c. 698, § 15 (new).] As defined by Maine's Natural Resources Protection Act, a river, stream, or brook is a channel that has defined banks (including a floodway and associated flood plain wetlands) created by the action of the surface water.

Patten officially has no rivers.

Aquifers

According to the Maine Geological Survey, there is one sand and gravel aquifer of approximately 416 acres located in the central portion of Patten. This aquifer is located along the Route 159 corridor and is mostly rated as being able to provide 10-50 gallons of water per minute. A small portion, located on the northern portion of the aquifer near Crystal is rated as having the potential of providing over 50 gallons of water per minute. Presently there have been no known impacts to groundwater in the aquifer however, there is an active gravel extraction operation taking place. Town officials and the landowner should ensure that adequate protection measures are in place to protect this groundwater resource.

As of 2016, there are four (4) public wells (two (2) with the Patten Water Department) registered with the Maine Source Water Assessment Program as public water systems. A public water system is any water supply that serves 25 or more people a day or has 15 or more service connections, for 60 or more days out of the year. There are different types of public water systems based on the type of population served, i.e. residential versus commercial. A Final Source Assessment Report was prepared for each of these sites in Patten. This information is summarized in the table below. The evaluation criteria is based on well type and site geology, existing and future risk of acute contamination and existing and future risk of chronic contamination. Acute contamination means risk of contamination from pathogens and nitrate/nitrites, the distance the source is from risks, like septic systems and the ownership or control of the land where risks are located. Chronic contamination means risk of contamination from any four of 89 chemicals like gasoline additives or pesticides, the presence of contamination sources within the wellhead area and the ownership, control or regulation of land in the wellhead area.

Name	Type	Source
Patten Water Department (2 wells)	Well #1 265 foot (Creamery) Well#2 161 foot (School Yard)	Groundwater
Katahdin Valley Health Center	104 foot well rated for 50 gallons per minute	Groundwater
Hangar Pizza	120 foot bedrock well	Groundwater

Source: Maine Source Water Assessment Program, 2017

Patten Water Department draws its water from two wells, both drilled in 1977. Well #1, which is 265 feet, is located on the corner of Dearborn Street and Roger's Lane. Well #2, which is 161 feet, is located in the old grammar school parking lot. At the present time, the water requires no treatment. The Patten Water Department maintain 180 connections that service a population of 450. In 2014, due to efforts to protect the water supply, the system was granted a 'Synthetic Organics Waiver.' This is a three year exemption from the monitoring/reporting requirements for the following industrial chemical(s): herbicides, carbamate pesticides, toxaphene/chlordane/PCB and semivolatile organics. This waiver was granted due to the absence of these potential sources of contamination within a half mile radius of the water source. The State of Maine Drinking Water Program grants a waiver only upon a finding that "it will not result in an unreasonable risk to health." There have been some minor violations with the water department in the past two years. This waiver was approved again in 2017.

It is important to protect groundwater from pollution and depletion. Once groundwater is contaminated, it is difficult, if not impossible, to clean. Contamination can eventually spread from groundwater to surface water and vice versa. Protecting a groundwater resource and preventing contamination are the most effective and least expensive techniques for preserving a clean water supply for current and future uses. Possible causes of aquifer and surface water contamination include agriculture, run-off of animal waste, faulty septic systems, road-salt storage and application, leaking above ground or underground storage tanks, agricultural run-off, auto salvage yards, and landfills. In addition to these major sources, things as diverse as golf courses, cemeteries, dry cleaners, burned buildings, and automobile service stations are potential threats to groundwater.

Wetlands

The Beginning with Habitat (BWH) database provides National Wetlands Inventory information to interested parties and has identified mapped wetlands in Patten totaling approximately 1,800 acres (approximately 7% of the land base). These wetland resources represent five classes and four functions. Wetland classes present include Floating or Submerged Vegetation, Emergent or Emergent/Forested Mix, Forested or Forested/Shrub-scrub, Shrubscrub and Rocky-unconsolidated. Wetland functions include Runoff/Floodflow Control and/or Erosion Control/Sediment Retention, Finfish Habitat, Plant/Animal Habitat and Cultural/ Educational which may include wetlands with other values and functions. These wetlands are distributed throughout the Town and provide multiple benefits to the community. Many of these wetlands contain fiddlehead patches which are an important food source for many residents and the focus of an annual festival.

The ecological value of some of the Towns wetlands is documented in the BWH database as high value plant and animal habitats. Many of the Towns wetlands are considered Inland Waterfowl and Wading Bird Habitat (IWWH) for waterfowl and wading birds. These freshwater habitats provide breeding and migration/staging areas for waterfowl and breeding, feeding, loafing, migration, or roosting habitat for inland wading birds. These special ecological values are one of the cornerstones of Patten's sustainability.

The "Thousand Acre Bog", located in the southeast corner of the township, is considered to be a unique area in terms of rare plants and insects that are site specific to this type of ecosystem. Naturalists, biologists and plant physiologists from the University of Maine have identified this bog as one worthy of preservation from timber harvesting or peat and gravel mining. The Nature Conservancy currently owns a portion of this bog which protects it from encroachment of any sort within their boundaries.

The bog is traversed by the Cow Team Road which begins at the Golden Ridge Road and goes easterly across the railroad tracks at Crystal Station, and then enters the bog. The Cow Team Road then roughly follows Fish Stream through the bog and emerges on the Beattie Farm in Crystal. It is approximately 0.5 miles to the east line of Patten at the Beattie Farm. This discontinued road may be traveled on foot, horseback, ATV or snowmobile sleds. The bog is also traversed by the railbed of the now discontinued railway spur from Sherman Station to Patten. This railbed is used

as an Interconnected Trail System (ITS 81) for snowmobiles and it an important link to Mattawamkeag, Lincoln and points south. This railbed is suitable for hiking, bicycling, horseback riding, ATVs, and snowmobiling.

Water Quality Protection Efforts

Patten has made progress in several areas of water quality protection over the years and continues to engage in practices that help mitigate sources of pollution. The town is working to repair and stabilize road ditching and working to address stormwater issues. Patten has participated in the MDEP's Small Community Grant program for replacement of faulty septic systems and constructed a sewer system. As a result, many sewer discharges to waters and road ditches have been eliminated and the town intends to continue to pursue this funding when they are available.

Patten's Water Department has a Source Water Protection Plan in place that regulates land uses within the wellhead protection area. Patten has a wellhead protection program that was developed in 2010. The Source Protection Plan inventories known and potential sources of contamination in the wellhead area and developed a series of regulatory and non-regulatory strategies designed to help manage sources of contamination. The Plan also develops a contingency plan for future development in the wellhead protection area. This Plan calls for the creation of a wellhead protection ordinance.

Water protection efforts are also included in Patten's Shoreland Zoning Ordinance. This ordinance speaks directly to water quality and applies to all activities within designated areas. The ordinance specifically prohibits the deposition on the ground or discharges to waters any pollutant that will impair the use of water or the water classification of any waters. The ordinance also includes provisions regarding erosion/sedimentation control and clearing and removal of vegetation and storm water runoff. Should the town consider the creation of other ordinances standards should be included that detail erosion/sedimentation control, storm water management requirements and provisions for sewage disposal.

Town Officials have identified the need for timber harvesting, wetland identification, and stream crossing/cattle crossing education for the residents. According to the code enforcement officer, educating landowners who plan to conduct these activities will help eliminate many of the enforcement issues seen in Patten.

Wildlife and Fisheries Habitat

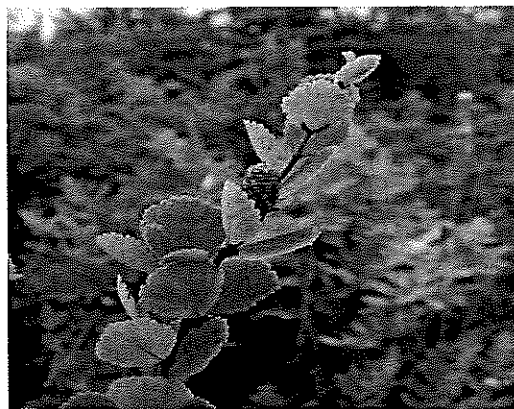
The abundance of Patten's prime agricultural and forest land soils is a good indicator of the town's potential to support wildlife. These areas, in addition to wetlands and riparian zones, create the diversity of habitat types necessary for most of Maine's major wildlife species, i.e. moose, deer, snowshoe hare, ruffed grouse, waterfowl, and fur bearers. White-tailed deer, moose, black bear and a variety of small game and other bird and mammals are abundant in town. Abandoned farmland areas provides prime habitat conditions for grouse (partridge), woodcock, and rabbits (hare). Populations of these important species are, in turn, influenced by the land use practices on both agricultural and forest lands.



According to IF&W, much of Patten's agricultural land that is no longer in crop production provides excellent feeding areas for wildlife year-round. Cut-over woodlands also provide feeding areas and when they are adjacent to uncut wooded conifer swamps with a high cedar component. These riparian zones provide important deer/moose wintering areas that are important to the welfare of these animals during the winter months. Bogs and wooded swamps have been recognized by the Maine Natural Areas Program as wildlife habitats that are not in great abundance statewide. Patten contains a substantial asset in this diversity of wildlife habitats and several areas have been identified as significant wildlife habitat.

Rare Plant Habitats and Occurrences

Rare plant habitats and the occurrence of individual rare plants have been identified at specific locations in Patten. There are one (1) identified rare plant species that occur in town. The Swamp Birch (*Betula pumila* L.), also called dwarf or low birch, is a medium-sized shrub, ranging from approximately one (1) foot to 10 feet high, with small, distinctively shaped leaves. The leaves, borne alternately on the dark twigs, are almost round in outline, with very coarse teeth around the leaf margin; they are lighter green or whitish beneath. The aments (elongate fruit clusters typical of birches) are borne upright and are about $\frac{3}{4}$ to $1\frac{1}{2}$ inches in length.



In Maine, its range is restricted to fen areas in bogs, or to similarly minerotrophic habitats on lake margins. It is sporadic in this part of its range. While rare in Maine it is not considered to be threatened or endangered and has been classified as a Special Concern. It has been found in 14 towns in Maine and was last seen in Patten in the 1990s.



While not listed on State databases, Planning Board members are aware that the Showy Lady Slipper (*Cypripedium Reginea*) has been found in town. In Maine, they are found in circumneutral peatlands (often at edges) or sunlit openings of mossy woods. The Showy Lady Slipper is listed as a threatened plant species and shares its scientific name of with the Royal Lady Slipper. The reason for its threatened status is habitat destruction and scarcity of suitable habitat.

Significant Wildlife Habitats

According to IF&W, no animal species listed as endangered, threatened, or of special concern have been documented in Patten as of the time of the writing of the Plan.

Patten contains Inland Waterfowl/Wading Bird Habitat (IWWH) which are wetland complexes important to the breeding and migration/staging of waterfowl and breeding feeding, loafing, migration, and roosting of inland wading birds. These areas also contain a 250-foot-wide upland zone surrounding them. The quality of a wetland complex is determined by the dominant wetland type, the diversity of wetland types in the complex, the size of the wetland(s), the interspersions of the different types, and the relative amount of open water. This habitat was mapped in 2008 and is located along the upper reaches of Fish Stream, around Wiley Pond, on the west Branch of Swift Brook, and along Weeks Brook at the Crystal town line.

These areas need to be protected under Patten's Shoreland Zoning ordinance.

Vernal Pools

According to IF&W, there are no identified Significant Vernal Pools in Patten and a comprehensive statewide inventory has not been completed at this time. Significant Vernal Pools may well be present within the town. Vernal Pools are naturally occurring, temporary to semi-permanent pools occurring in shallow depressions in forested landscapes. Vernal pools provide the primary breeding habitat for wood frogs, blue-spotted and spotted salamanders, and fairy shrimp and provide habitat for other wildlife including several endangered and threatened species.

Deer Wintering Areas

At the time of the writing of this plan, IF&W has not documented any high or moderate value deer wintering areas. These areas are rated according to their size, cover, food, and numbers of deer. Travel corridors typically follow major rivers or streams with adequate cover that allow deer to move safely to their required habitats. However, IF&W's Regional Biologists are in the process of identifying potential biological deer wintering areas. These non-regulatory areas possess existing habitat conditions suitable for deer and exhibit historical and/or current deer use. These areas may provide good opportunities for landowners interested in managing for deer, and Town Officials will work with the regional IF&W biologists to obtain information on any biological deer wintering areas within the town.

The Beginning with Habitat map shows three "candidate" deer wintering areas which are forested areas possibly used by deer for shelter during periods of deep snow and cold temperatures. Assessing the current value of a deer wintering area requires on-site investigation and verification by IF&W staff. While locations depicted should be considered as approximate only, candidate deer wintering areas are located along the East and West Branches of Swift Brook and around Potter Pond.

Fisheries

When discussing the local fisheries resource, it is essential to clarify the critical role that all of the town's streams, however minor, play in the health of the resource. Though all of them may not actually support brook trout populations, they serve to maintain the cold-water temperatures necessary for healthy, viable populations. Brook trout become stressed in water temperatures above 68 degrees Fahrenheit for extended periods. Maintaining shade cover along all of Patten's 183 plus miles of streams will help keep water temperatures suitable for brook trout.

Town officials will work with landowners located along the town's streams and brooks to protect and preserve riparian habitat. Riparian habitat is important to help maintain water quality by preventing sediment, nitrogen, phosphorus, pesticides and other pollutants from reaching the waterbody. Overhanging riparian vegetation keeps streams cool, this is especially important for Maine's wild Brook Trout populations. Riparian vegetation slows floodwaters, thereby helping to maintain stable streambanks and protect downstream property. By slowing down floodwaters and rainwater runoff, the riparian vegetation allows water to soak into the ground and recharge groundwater. Slowing floodwaters allows the riparian zone to function as a site of sediment deposition, trapping sediments that build stream banks and would otherwise degrade streams and rivers.

Critical Habitat- Atlantic Salmon

While there are conflicting reports between the IF&W and the US Fish and Wildlife Service, Patten has been identified as having critical habitat for Atlantic Salmon, especially in those tributaries located in the Mattawamkeag watershed. The U.S. Fish and Wildlife Service's (USFWS) Gulf of Maine Program, working with the Maine Fisheries Resource Office and other USFWS field offices, state agencies, nonprofit organizations, industry representatives and stakeholders, is assisting with mapping spawning and nursery habitat, developing watershed land cover information, providing assistance to watershed coalitions by identifying potential threats to salmon survival, providing technical assistance to partners in assessing and restoring natural river channels, and developing on-the-ground partnerships to protect salmon habitat.

Stream Crossings and Culverts

Beginning in 2007, the StreamSmart program at Maine Audubon and IF&W surveyed culverts on local and State roads and identified those which were blocking fish passage. Stream smart crossings are designed to provide enough capacity to pass sediment, debris, fish and high flows from extreme storm events without failure or damage to the structure.

Thirty-four (34) culverts were surveyed in Patten of which thirteen (13), or 38%, were considered to be blocking fish habitat. These culverts are located throughout the community with the highest percentage located along Webb Brook and Fish Stream. In 2018, the MaineDOT will be replacing one of the culverts, located along Webb Brook in the downtown on Main Street. Upon completion, the culvert will better mimic natural conditions and being constructed at 1.2 times bank width; this will improve its capacity to allow large flow volumes in extreme precipitation events and allow fish passage.

As part of their creation of the 20 Year Road Improvement Plan, Town officials are utilizing this data to upgrade and increase the size of culverts to improve stream flow and fish passage as part of their normal culvert replacement program. Town officials will prioritize stream crossings that have been identified as barriers to fish and wildlife passage. Town officials will apply for grant funding to help offset the cost of replace these crossings.

Analyses

Patten's water resources have been well protected from point sources of pollution. Many years of participating in the DEP small community grant program has reduced point source impacts of sewage and the town maintains a waiting list to assist eligible property owners when funds are available.

There are several non-point sources of water pollution that have been identified in Patten including lot development by homeowners, agricultural uses including tillage and livestock and some logging operations by land owners or small independent contractors. The extent of the issue is not documented; however, the character of these issues is pertinent to how the Town responds. Whether or not a permit is required, many homeowners do not use erosion/sedimentation control for their projects. Education will help.

Issues with erosion and runoff are largely related to topography and major rain events that overwhelm conservation practices. Most often, conservation practices are in place in active forest operation and on farms. There are a few instances of unrestricted crossing of streams by livestock and USDA programs exist to help with these issues.

Non-point sources from small logging operations often relate to major rain events. The use of best management practices is sporadic and presently not required in the Shoreland Zoning ordinance. Neither a USDA-NRCS office or a Soil and Water Conservation District office are nearby but landowners have the opportunity to work with Soil Conservationists, Agricultural Engineers, and/or foresters. Their resources are available to property owners that request help and requests must be direct from a land owner and not the Town.

Patten's non-municipally owned public drinking water supplies typically are not well protected from contamination risks. This is partially due to the fact that owners do not control the land use activities within their respective well head protection areas of 300 feet. The Maine Drinking Water Program inspect these sources periodically and owners are required to test annually.

Partnering with regional advocacy groups in the area of water quality protection is possible. The Penobscot County Soil and Water Conservation District (PCSWCD) office is located in Bangor. The District Coordinator can certify that local contractors have complied with BMP's for sedimentation and erosion control. The office also sponsors educational workshops that may include helping homeowners understand and implement BMP's. The PCSWCD can also seek grants for special water quality improvement projects and water quality monitoring.

While development pressure on Patten's critical natural resources is minimal, the lack of awareness of these resources keeps them under constant threat. Wetland areas classified as inland waterfowl and wading bird habitat have been subject to local shoreland zoning for decades. As such, they are probably the least threatened of the critical resources. The land use permitting process creates the mechanism for monitoring activities that may harm these resources. The placement of fill along the edge of wetlands is not uncommon in association with agricultural activity and road building and these activities are not closely monitored.

Patten's Shoreland Zoning standards are outdated and in need of significant updates. While their ordinance can be more stringent than the State's minimum Chapter 1000 guidelines, there is wording, standards, and dates that need to be changed. Patten also has the ability to regulate timber harvesting or turn that over to the Maine Forest Service. Amendments to the State's Shoreland Zoning Guidelines became available in 2016 and town officials should be watchful for those and amend their ordinance as needed.

The Town may wish to review the existing zoning districts in light of the critical natural resource data. This could help extend greater protection to these resources and 100 year floodplains. Town officials may want to review local shoreland zoning standards with those of the neighboring communities in the context of the designated districts. A joint review between planning boards of shoreland zoning districts near municipal boundaries might help identify the basis and agreement for more consistent zoning.

Agriculture and Forestry

Introduction

Forestry and agricultural resources help maintain the town's character and provide a steady and stable tax base. Forestry has a stronger position economically in the community. Issues regarding timber harvesting tend to be more regional or focused on a specific act of an individual landowner or independent logger. That said, both agriculture and forestry are a part of Patten's heritage. This legacy is still apparent in the landscape of town. The Patten Lumberman's Museum highlights the importance of logging in the town's history and visitors today will see heavily loaded logging trucks and chip trucks on many of the roads.

The economic activity generated by the forest industry is very significant in Patten and includes excise taxes, personal property taxes, fuel, and multiple trucking and harvesting companies. Interestingly, most of Patten's woodlands are in small private ownerships of less than 1000 acres and many of the surrounding communities have similar characteristics. There are approximately 18 active timber harvest notifications submitted to the State annually that account for over 700 acres harvested. The Town's forest land has great potential to be managed for many values to the community including water quality, wildlife, and recreation.

Tourism and recreation rely significantly on the access to these land resources and the wildlife and scenic qualities they create. While the number of farm families has declined, many familiar names are still actively engaged in farming and provide employment and economic activity. Patten has several soil types considered prime farmland/forestland soils that are of statewide importance. Farming's economic and cultural value to the community is widely known and appreciated by

many residents. The protection of valuable farmland and active farms can help control rising property taxes and the cost of municipal services.

Forestry and Agriculture (portions of this appears in the Local Economy section of the plan)

Forestry and farming need economically viable conditions. While the development of a comprehensive plan can do little to create markets for agricultural and forest products, there are several strategies town officials can take to encourage additional markets and local transactions). Property taxation; the crowding of working lands by homes and other uses that might consider farm and forest operations a nuisance; and sewer and water line extension policies that promote residential development into rural areas all affect the economics of farming and forestry. Patten can consciously influence or control these factors.

More localized data was compiled with the assistance of the Maine Forest Service and town officials. Town officials keep track of Tree Growth information. The Maine Tree Growth Tax Law provides for the valuation of land that has been classified as forest land on the basis of productivity value, rather than on just value. The law is based on Article IX, Section 8 of the Maine Constitution that permits such valuation of forest land for property tax purposes. The land must be used primarily for the growth of trees to be harvested for commercial use. Owners must manage tree growth classified parcels according to accepted forestry practices designed to produce trees having commercial value. In considering this option owners may be guided by, but are not limited to, the following accepted forestry practices: timber harvesting, tree planting, direct seeding, site preparation, thinning, cleaning, weeding, pruning, inventory of standing timber, forest protection measures (insect, fire, wind, etc.), and boundary line work.

Patten Tree Growth, 2017

Number of Landowners	Number of parcels		Softwood Value	Mixed Wood Value	Hardwood Value	Total Value
48	72		\$258,822	\$892,097	\$500,744	\$1,651,693

Source: Town of Patten, 2017

The following harvest information was provided by the Maine Department of Agriculture, Conservation, and Forestry and is the most recent available. On average, there are about 723 acres of land (18 harvesting operations) harvested in Patten each year.

Summary of Timber Harvesting for the Town of Patten

YEAR	Selection harvest, acres	Shelterwood harvest, acres	Clearcut harvest, acres	Total Harvest, acres	Change of land use, acres	Number of active Notifications
1991	215	10	195	420	0	4
1992	477	28	124	629	0	9
1993	155	0	0	155	0	6
1994	426	50	17	493	0	6
1995	370	68	10	448	0	9

YEAR	Selection harvest, acres	Shelterwood harvest, acres	Clearcut harvest, acres	Total Harvest, acres	Change of land use, acres	Number of active Notifications
1996	632	0	5	637	0	11
1997	472	0	0	472	5	9
1998	387	125	0	512	0	11
1999	701	32	0	733	0	25
2000	322	159	0	481	0	21
2001	708	168	12	795	2	15
2002	1,024	4	0	1,028	0	25
2003	500	316	0	816	0	22
2004	576	15	0	591	0	23
2005	1,141	124	0	1,265	0	31
2006	1,204	392	0	1,596	1	31
2007	744	138	0	882	5	31
2008	755	515	0	1270	0	27
2009	503	136	23.4	662.4	0	21
2010	772	105	0	877	0	22
2011	443	377	0	820	0	20
2012	213	157	26	396	22	18
2013	263	397	0	660	0	17
Total	13,003	3,316	412.4	16,638.4	35	414
Average	565	144	18	723	2	18

Source: Maine Department of Agriculture, Conservation, and Forestry, 2017

Agriculture

As in Forestry, town specific agricultural information is difficult to obtain but Penobscot and Aroostook County information was obtained through the Census of Agriculture and American Community Survey. The following tables show agricultural data for Penobscot and Aroostook Counties for 2002, 2007, and 2012, the latest Census of Agriculture.

Penobscot County Agricultural Data 2002-2012

	2002	2007	2012	Percent Change
Number of Farms	575	545	677	17.7
Land in Farms (acres)	107,082	68,719	75,725	-29.3
Average Size (acres)	186	126	137	-26.3
Market Value of Products Sold (\$000)	\$28,955	\$42,523	\$50,155	73.2
Average Farm Reporting Sales	\$50,357	\$60,231	\$74,084	47.1
Government Payments (\$000)	\$1,417	\$889	\$1,044	-26.3

Source: USDA 2002, 2007, 2012 Census of Agriculture Summary Report

Aroostook County Agricultural Data 2002-2012

	2002	2007	2012	Percent Change
Number of Farms	1,084	1,246	895	-17.4
Land in Farms (acres)	391,675	375,568	350,911	-10.4
Average Size (acres)	361	301	392	8.6
Market Value of Products Sold (\$000)	\$121,158,000	\$146,516,000	\$210,517,000	73.7
Average Farm Reporting Sales (\$000)	\$111,770	\$117,589	\$235,215	110.4
Government Payments (\$000)	\$2,333,000	\$2,779,000	\$2,942,000	2.6

Source: USDA 2002, 2007, 2012 Census of Agriculture Summary Report

As stated in the introduction, Patten's potato acreage has declined since its heyday in the 1970s. However, there is a varied and diverse agricultural community that grows a variety of crops that are for sale to the general public. These include vegetables, beef, dairy, pigs, hay, oats, barley and other crops.

Community Farming and Forestry Activities

Northern Maine Development Commission and other economic development agencies in Washington, Penobscot, Piscataquis, and Aroostook County recently completed a report designed to examine changes in the regions agricultural communities and develop a list of strategies to help sustain small agriculture. General recommendations include:

1. Encourage further development of networks involving all along the food production value chain in the region. Continue to engage with partners and form additional connections in Penobscot and Piscataquis Counties.
2. Promote Food Hubs and Distribution Nodes in the region, by providing technical assistance to grant applicants. Utilize Small Business Administration Small Business Development Center staff to assist growers, and those looking to expand into delivery.
3. Continue to facilitate meetings between local institutions, wholesalers, growers and others to grow markets and opportunities.
4. Expand Microloan programs, possibly utilizing Community Development Financial Institution (CDFI) funds, for producers to expand business and assist distributors in the purchase of cool and cold storage units.
5. Promote the local foods movement and institutional buying opportunities through collaboration with the Maine Farm and Sea Cooperative, Maine Farmland Trust and institutional buyers such as area hospitals, universities and school districts.
6. Solicit grant opportunities to better train potential growers on sound business practices, including creating a business plan, marketing, QuickBooks, Farm Service Agency and USDA services, etc.
7. Assist efforts to assist in the expansion of an online ordering arrangement from strictly retails into a wholesale system with expanded delivery routes and just compensation rates for producers. Replicate system to work in all northern Maine.
8. Continue representation with the Maine Food Strategy.
9. Engage social and traditional media to inform producers about opportunities to grow markets and increase distribution channels.

Patten and the Penobscot County Soil and Water Conservation District are supporting community farming projects. The District is presently engaged in a project to develop a local producer cooperative and to create better access to locally grown foods in the community. Local farmers' markets have waned in recent years for lack of leadership and management. Interest among residents, in the market and local foods, has been present for decades. The project has potential to re-energize community agriculture by securing commitments from several producers and establishing Farmers Markets. The reinvigoration of this market may allow local producers year-round access to the local market and resident's year-round access to local foods and other products.

There are also several beef producers in the region that are interested in developing a USDA certified slaughter facility. If developed, this slaughter facility could open up markets for the region's beef producers and provide them with a closer option for slaughter. Presently, producers wishing to utilize a USDA certified facility must ship their product to central Maine. Beef producers in the region have identified the following issues:

- There are very limited USDA Inspected facilities in the region. Producers have to travel to Charleston, North Anson, or other locations to have their beef slaughtered and cut. This is time consuming, expensive, and may contribute to a lower grade of beef.
- There is limited cooler space available in the region. An older study identified space to hang approximately 40 head for 14 days. Producers prefer a 21 day hang time.
- Need of a USDA Inspected Facility with quick freeze and cryovac. This facility also needs to have the capacity to hang a sufficient number of animals for 21 days or more.

- Facility needs to be centrally located.
- Pork/poultry needs to be considered.
- Scheduling for organic, all natural, and conventional farms needs to be considered.
- Need to ensure that there is some product available throughout the year. Downtime for slaughter operations is expensive.
- Need to look at the options of purchasing and expanding an existing business or constructing new. Facility needs 3 Phase power, water and sewer. Also needs to be located in an area that is receptive to the use.

The Amish community has purchased many of the underutilized or abandoned farms in Patten and surrounding communities. The Amish are utilizing many of the farms for livestock, vegetable production, and the manufacturing of furniture, both for their own consumption and for sale. This reuse has had the effect of increasing the value of vacant farmland as well as providing residents and visitors an opportunity to purchase locally grown products.

Patten has also seen an increase in the number of smaller livestock and dairy producers. In some cases, these farmers are producing for themselves while others are selling to the general public.

Analyses

Agriculture/Forestry Importance: Agricultural and forest resources have substantial economic and cultural importance in Patten. These resources provide economic activity, employment and recreational space for use by residents and support for tourism. The Local Economy section discusses this in detail in terms of location quotient analysis.

Overall, the agricultural and forest resource base is stable in Patten meaning that there is relatively little acreage that is being converted to other uses. Based on conversations with local officials, the amount of active farmland is growing, thanks to Haymart and the Amish moving into the area. Both have converted inactive farmland back into product uses.

Protection of Resources: The Town is minimally engaged in regulatory or nonregulatory actions specifically designed to protect active farmland and productive forestland. While Patten does not have an extensive regulatory framework that creates a basis for protecting agricultural and forest resources, Town officials should consider creating and updating regulations as deemed necessary. Many feel the existing State and local regulations are sufficient for protecting these resources and threat to these resources is limited.

Participation by Patten's farm and forest land owners in any of Maine's current use tax programs is minimal. The Tree Growth Program is the most widely used. The use of the Farm or Open Space Taxation Programs is nearly non-existent. Many agricultural and forestland owners have pointed out how damaging the State's Homestead Exemption Tax Program has been to owners of agricultural and forest resources by shifting that tax burden to these resources based properties. Unfortunately, this burden can only be offset by the property owner's participation in one of the current use programs. More education and awareness of these programs may help stimulate broader participation and long-term protection of these resources.

The trend toward increased residential uses in the rural farm areas is identified in the Land Use section. This trend, however, does not appear to have affected the conduct of agricultural or logging operations in the community. There are relatively minor issues between residential users and resource based users. There are two major reasons for this, many residential users still have connection to someone that works in logging or farming and many also use these resource lands for their recreation. The practice of farming and logging is widely accepted in the community and there have been few complaints.

NATURAL RESOURCES
Goals, Policies, Strategies

Goal: Protect and preserve the natural resources on which its economy and quality of life depend, through preservation of land, facility improvement, education, and citizen stewardship.

Policy	Strategy	Responsibility	Timeframe
Identify, monitor and conserve Patten's significant natural resources including rare plant populations, moderate to high value nesting habitat for water fowl and wading birds, and bird species.	Work with the Mount Chase, Stacyville, and Crystal Planning Boards to ensure consistent standards for the protection of shared watersheds.		
Water Resources and Water Quality			
Protect and improve the water quality of both surface and ground waters, especially the aquifer providing the Town's drinking water	Update and maintain land use standards that are consistent with the State minimums for local shoreland zoning.	Planning Board	2018 and on-going as needed.
	Cooperate with other local, regional and State entities in the conservation of natural resources of shared interest such as the Swift Book, Fish Stream, and Weeks Brook.	Town Officials, Planning Board, Highway Dept.	On-going
Maintain and improve water quality, brook trout fisheries, wildlife habitat and habitat connectivity through the conservation of all riparian habitats.	Work with the Penobscot County Soil and Water Conservation District to conduct educational meetings on the resource value of riparian habitats.	Town Officials	2017 and On-going
	Identify through the building permit review process when any development occurs within a habitat connector.	Planning Board	2017 and On-going
	Cooperate with IF&W and other State agencies to provide property owners with guidelines to voluntarily minimize impacts on habitat connectors.	Town Officials, Planning Board, and IF&W	On-going

Policy	Strategy	Responsibility	Timeframe
	Utilizing the StreamSmart Habitat Viewer's culvert inventory map, town officials will prioritize stream crossing that have been identified as barriers to fish and wildlife passage. Town officials will apply for grant funding to replace these crossings.	Town Officials	2017 and on-going
	Continue to update the local shoreland zoning ordinance to keep it current with the State minimum guidelines.	Planning Board	2018 and on-going
	Enforce the land use standards for all activities within the shoreland zone.	Planning Board and Code Enforcement	On-going
	Provide educational seminars and literature for property owners who do their own site development work.	Planning Board and MDEP	On-going
	Monitor and annually report land use permit activities within the two Great Pond watersheds and assess the need to apply sedimentation and erosion control and storm water runoff standards.	Code Enforcement and Planning Board	On-going
	Work with Penobscot County Soil and Water Conservation District (PCSWCD) to pursue grants through USDA, MDEP, Maine Potato Board, and University of Maine Cooperative Extension to develop educational programs for small and large agricultural producers and their role in non-point source pollution.	Town Officials and Planning Board	2017 and On-going
	Continue to work with the PCSWCD to offer technical assistance to livestock producers to reduce their role in non-point source pollution.	Town Officials	2016 and on-going

Policy	Strategy	Responsibility	Timeframe
Minimize pollution discharge through the upgrade of existing septic systems and wastewater treatment facilities.	As septic systems fail in areas served by Patten's Sewer Department, assist homeowners and business with connections.	Town Officials	On-going
	Encourage replacement of malfunctioning septic systems. Educate the public about the importance of maintaining and replacing onsite systems.	CEO and Plumbing Inspector	On-going
	Make application, where eligible, to the Small Community Grant Program to upgrade any failing septic systems	Planning Board and Town Officials	On-going
	Continue to apply for Small Community Grant or other funds, such as CDBG, that replace faulty septic systems impacting water quality. Work with Penobscot County Action Program (PENQUIS) if homeowners qualify for their programs.	Town Officials	2017 and on-going
	Include a reminder about septic tank pumping at 3-year intervals with tax bills.	Town Officials,	On-going
	Modify the building permit application process to include information on the age and condition of fuel tanks.	Planning Board	On-going
Fish and Wildlife			
Educate residents and visitors about important habitat and water quality values.	Develop informational signs and brochures (maps) on critical habitat and public accesses,	Town Officials	2019
	Encourage landowners to protect and preserve wildlife habitat, and utilize public/private conservation partnerships to preserve undeveloped land around or near critical or important natural resources.	Planning Board, Town Officials	On-going

Policy	Strategy	Responsibility	Timeframe
	Make available to the public the most recent data on rare plants, animals, and natural communities and important wildlife habitats provided by the Beginning with Habitat program of the Department of Inland Fisheries and Wildlife, included on maps in this document.	Planning Board, Town Officials	On-going
Conserve critical natural resources in the community, including existing fish and waterfowl/wading bird habitats.	Designate critical natural resources mapped as Essential Habitat or Significant Habitat as Critical Resource Areas in the Future Land Use Plan.	Planning Board	2017-18
	Include as part of the Planning Board review process consideration of pertinent Beginning With Habitat maps and information regarding Critical Resources.	Planning Board	2018
	Require subdivision or non-residential property developers to identify any Critical Resources on site and take appropriate measures to protect those resources.	Planning Board, CEO	2018
	Maintain state standards for construction and maintenance of local roads when development is proposed in or near the site of Essential or Significant Habitats or Critical Resources.	Town Officials and Highway Department	On-going
	Protect the high and moderate fisheries habitats in accordance with Shoreland Zoning regulations around these habitats.	Planning Board, CEO	On-going
Forest and Farmland Resources			
Support long-term economically viable and environmentally sustainable forest management within Patten.	Support owners of productive farm and forestland in their efforts to enroll in Current Use programs, such as Tree Growth and Farmland, Open Space.	Tax Assessor	On-going
	Encourage local or regional economic development activities that support productive agriculture and forestry operations.	Town Officials, Planning Board, UVEC, NMDC	On-going

Policy	Strategy	Responsibility	Timeframe
	Promote use of best management practices for timber harvesting and agricultural production; provide information to the public.	Planning Board	On-going
Encourage the use of prime farmland for commercial agriculture or forestry.	Support timber management and agricultural activities on prime farmland and in rural areas of Patten.	Town Officials, Planning Board	On-going
	Include in any future land use ordinance a requirement that commercial or subdivision developments maintain areas with prime agricultural soils as open space to the greatest extent practicable.	Planning Board	On-going

Beginning with HABITAT

An Approach to Conserving Maine's Natural
Space for Plants, Animals, and People

www.beginningwithhabitat.org

Primary Map 1

Water Resources & Riparian Habitats Patten

This map is nonregulatory and is intended for planning purposes only



Beginning with HABITAT

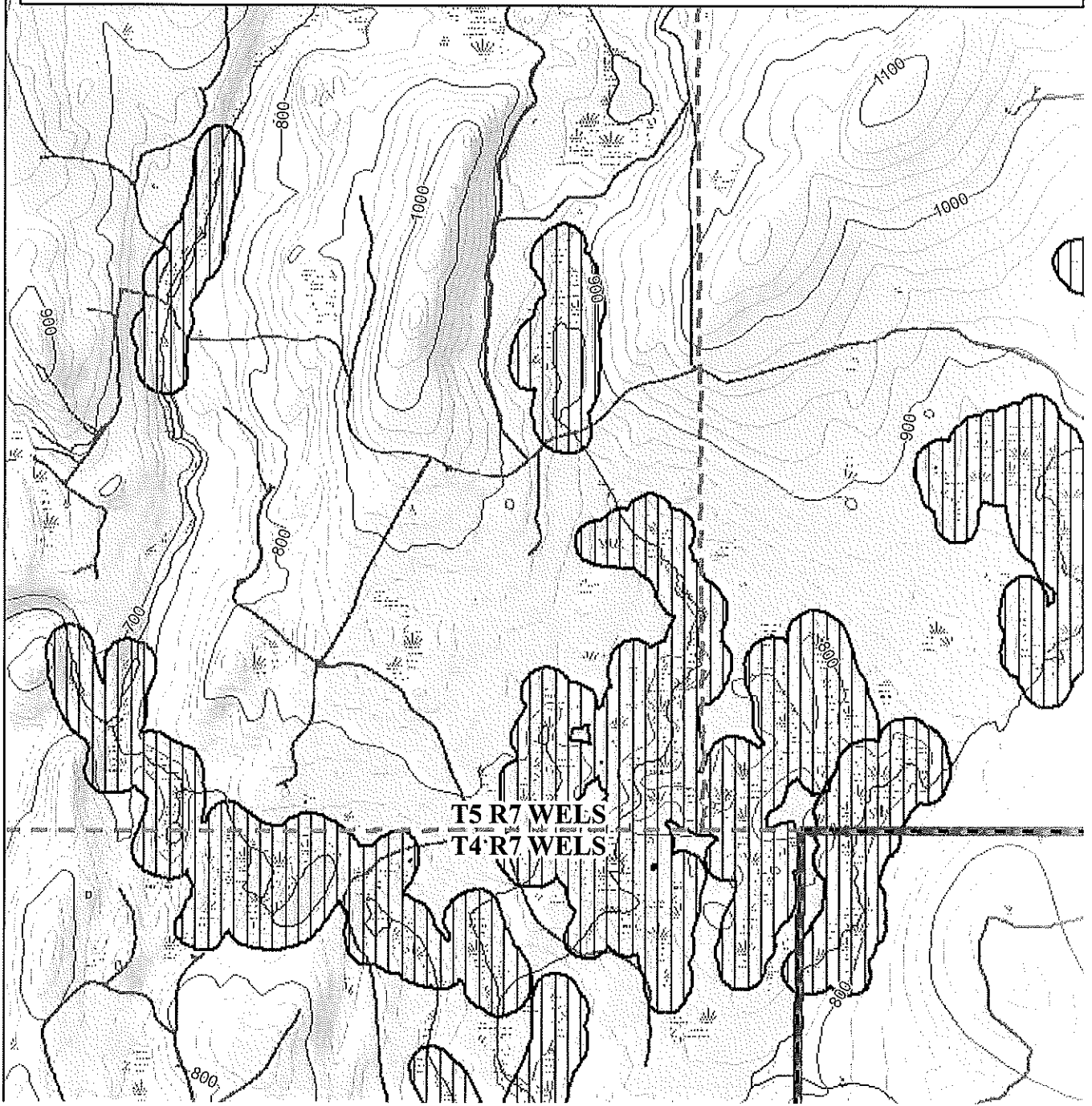
An Approach to Conserving Maine's Natural
Space for Plants, Animals, and People

www.beginningwithhabitat.org

Primary Map 2

High Value Plant & Animal Habitats Patten

This map is non-regulatory and is intended for planning purposes only



Beginning with
HABITAT

An Approach to Conserving Maine's Natural
Space for Plants, Animals, and People

www.beginningwithhabitat.org

Primary Map 3
**Undeveloped Habitat Blocks &
Connectors and Conserved Lands**
Patten

This map is non-regulatory and is intended for planning purposes only



Hazard Mitigation



Hazard Mitigation

Introduction

This section identifies natural hazards, assesses the vulnerability to each hazard, and establishes community goals and objectives for reducing their effect and select mitigation activities that are appropriate for Patten. The goal of these activities is to stimulate awareness that will best address Patten's natural hazard vulnerabilities and to meet the needs of the municipality in addressing future mitigation and emergency management.

Flooding

Floodplains serve to accommodate high levels and large volumes of water and to dissipate the force of flow. A floodplain absorbs and stores a large amount of water, later becoming a source of aquifer recharge. Floodplains also serve as wildlife habitats, open space, and outdoor recreation without interfering with their emergency overflow capacity. As with any community, flooding can cause serious destruction of property. Activities that increase paved or impervious surfaces and/or that change the watercourse on floodplains can increase the quantity and rate of runoff that can intensify flooding impacts downstream.

The Federal Emergency Management Agency (FEMA) administers the Federal Flood Insurance Program and has identified the 100-year floodplains located in Patten. A 100-year flood is a flood that has one (1) chance in 100 of being equaled or exceeded in any 1-year period. Local flood plain areas fall into two major categories: areas prone to flooding and velocity zones or areas susceptible to damage from wind-driven rain.

The most recent floodplain map was developed in 1985 and identifies unnumbered A zones. Floodplains are scattered throughout town and are generally associated with smaller streams and brooks. The largest blocks of floodplains are associated with Fish Stream, Peavey Brook, Rowe Brook, Webb Brook, and Weeks Brook located in the center of Patten. Other large areas are in the southeastern portion of Patten around Blackwell Bog and the West Branch of Molunkus Stream. These maps are in need of review and updating. One notable area that town officials have been called about is the area around Station Street.

According to the Penobscot County Emergency Management Agency, there have been three flood loss events in Patten. One in 1996, one in April/May 2008, and the third in 2012. According to FEMA, there have been no repetitive loss properties in Patten. In the 2016 Hazard Mitigation Plan, Patten identified a culvert located on the Happy Corner Road as needing replacement. This project, located on a floodprone section of the road includes elevating 500 feet of road over a foot and upsizing a culvert. The estimated cost, at that time was \$38,000. A bridge replacement project on the Waters Road has also been identified.

As stated in the Land Use section, Patten updated their Floodplain Management Ordinance in 2011. Town officials should consider contacting the Maine Department of Agriculture, Conservation, and Forestry's (MDACF) Floodplain Management Program for technical assistance relating to floodplain management ordinance and mapping updates. MDACF provides assistance to municipalities which includes the development of ordinances and permit applications. These

ordinances are designed to ensure that floodplain management measures are appropriately applied in flood hazard areas and in many cases, ordinances follow state minimum guidelines.

Other Hazards

Hazard mitigation planning is developed and coordinated at the County level by the Penobscot County Emergency Management Agency (PCEMA). PCEMA completed a 2016 update to the Penobscot County Hazard Mitigation Plan which received final FEMA approval. Patten also receives notices from the Aroostook County Emergency Management Agency (AKEMA) because of their administrative relationship with Moro Plantation and Hersey. This plan was adopted by Town Officials in November 2016. All municipalities are asked to participate in this planning process and to provide a list of potential projects should emergency funding become available. Patten has participated and provided the required information. With input from municipal officials, the hazard committee identified three (3) major threats to Patten; Severe Summer Storms, Severe Winter Storms, and Wildfire.

PCEMA lists four priorities in their Hazard Mitigation Plan when discussing hazard mitigation; flooding, severe winter storms, severe summer storms, and wildfires. Penobscot County is known for its long and, often thought of, severe winters. Winter storms are ranked as the second highest hazard in Maine behind flooding. These include heavy snow, ice storms, blizzards, freezing rain and winter storms. Nor'easters, the most severe winter storm, can produce precipitation amounts exceeding several inches of water equivalent to 20-30 inches of snow or more, and produce wind speeds equal to or greater than those of hurricanes. Primary damage that can be expected in severe winter storms is to overhead utilities lines and the costs of clearing vegetation covering local roads. It should be noted that over 50% of winter storm related deaths are attributed to exposure to the cold. The most vulnerable are those over the age of 60 and male. Approximately 20% of the cold related deaths occur in the home.

Severe summer storms typically have the greatest impact on road infrastructure although high winds associated with thunderstorms or tornados can down trees causing disruptions to electrical and telephone service. Summer storms tend to be more localized (exception could be a hurricane) and PCEMA has estimated that severe summer storms could potentially impact \$40-50,000 of public infrastructure at any one time. This number could be significantly higher depending on the extent and duration of the storm. A majority of Maine's wildfires are caused by lightning strikes during severe summer storms. Town officials should work with Eastern Maine Electrical Cooperative and EMERA on tree trimming in areas that could potentially impact transmission lines.

Patten contains a mixture of forests and farms and development is occurring in these areas. The town is also vulnerable to wildfire, especially during periods of drought, given the extent of its urban/wild land interface and increased residential construction in forested areas. While adequate rainfall normally reduces the risk of forest fire, seasonal variations, rapidly draining soil types, and unusually dry periods can change the susceptibility rating considerably. Logging operations provide large amounts of ignitable slash. Severe summer and winter storms damage trees that could provide additional fuel while budworm infestation has killed millions of trees. All of these

occurrences provide a future supply of dry fuel on the forest floors, as well as tops of trees to sustain crown fires.

A spotting and warning program in effect when forest fire danger is high would enable evacuation and firefighting efforts to begin as soon as possible. Mutual aid agreements between municipal fire departments and regional industry must be developed and maintained. The Bureau of Forestry of the Department of Conservation (Maine Forest Service) has an active role in education, prevention, identification, and response to forest fires in the State of Maine.

In the town of Patten, burning permits are required for outdoor burning of brush piles or wood debris anytime throughout the year. Depending on the current fire danger, other restrictions may be in place. Patten provides fire protection for Moro Plantation and Hersey and burning permits can be obtained either on-line or through the Town Fire Warden. It is estimated that in a worst-case scenario, Patten could suffer losses of over \$17 million in a severe wildfire.

Town Officials are also aware that hazardous industrial and commercial chemicals and fuel oil are transported to and through Patten via heavy trucks. According to the Maine Department of Environmental Protection (MDEP), there have been a number of petroleum and hazardous substance (ammonia, etc) spills in Patten with a majority in the downtown area.

Town officials need to be watchful of hazardous material transportation through the community. Fire Department personnel are trained in the response to accidents that may contain hazardous materials. Training is on-going and contains OSHA and NFPA standards that help minimize or eliminate exposure. Patten also provides ambulance service for a number of communities including Stacyville, Hersey, Sherman, Crystal, Mt. Chase, County of Aroostook (Benedicta, Moro Plantation, Silver Ridge, T2R4, T3R4, T1R5, and T1R4), and Penobscot County (T1R6, T2R7, T2R8, T3R7, T3R8, T4R7, T4R8, T5R7, T5R8, T6R6, T6R7, T6R8, T7R6, T7R7, T8R6, T8R7, and T8R8).

The Maine Environmental and Geographic Analysis Database (EGAD) (formerly known as the Environmental and Groundwater Analysis Database) was originally designed to store site and water quality information and currently includes spatially located data for 39 different types of potential and actual sources of contamination to groundwater in Maine. Access to comprehensive up-to-date analytical data allows DEP to assess trends in regional ground water quality and quantity. It also improves automated analysis and map-making capability including rapid access to information for emergency response to hazardous materials spills. Detailed well and analytical information in the database is used by staff to design remedial action at hazardous spill sites. It is also used by staff to evaluate potential for cumulative impacts of real estate development on ground water quality.

Recent efforts to expand and improve EGAD have involved the inclusion of data from the Bureau of Land & Water Quality including the addition of 10 Biological and Surface Water Sampling site types. This is in addition to the data that continues to be included from the Bureau of Remediation & Waste Management. To encapsulate the new addition of data from Land & Water Quality and to acknowledge the spatial (GIS) component of the data, EGAD is now known as the Environmental and *Geographic* Analysis Database, as data in EGAD now includes a broad range

of environmental data including physical, chemical, biological and spatial data. Information can be found at the following website: <http://www.maine.gov/dep/maps-data/egad/index.html>

Dams

There are no high hazard dams located in Patten.

**HAZARD MITIGATION
Policies & Strategies**

State Goal

Discourage development in natural hazard areas. Municipalities shall prevent inappropriate development in these areas including floodplains and high erosion areas.

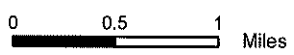
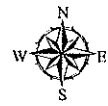
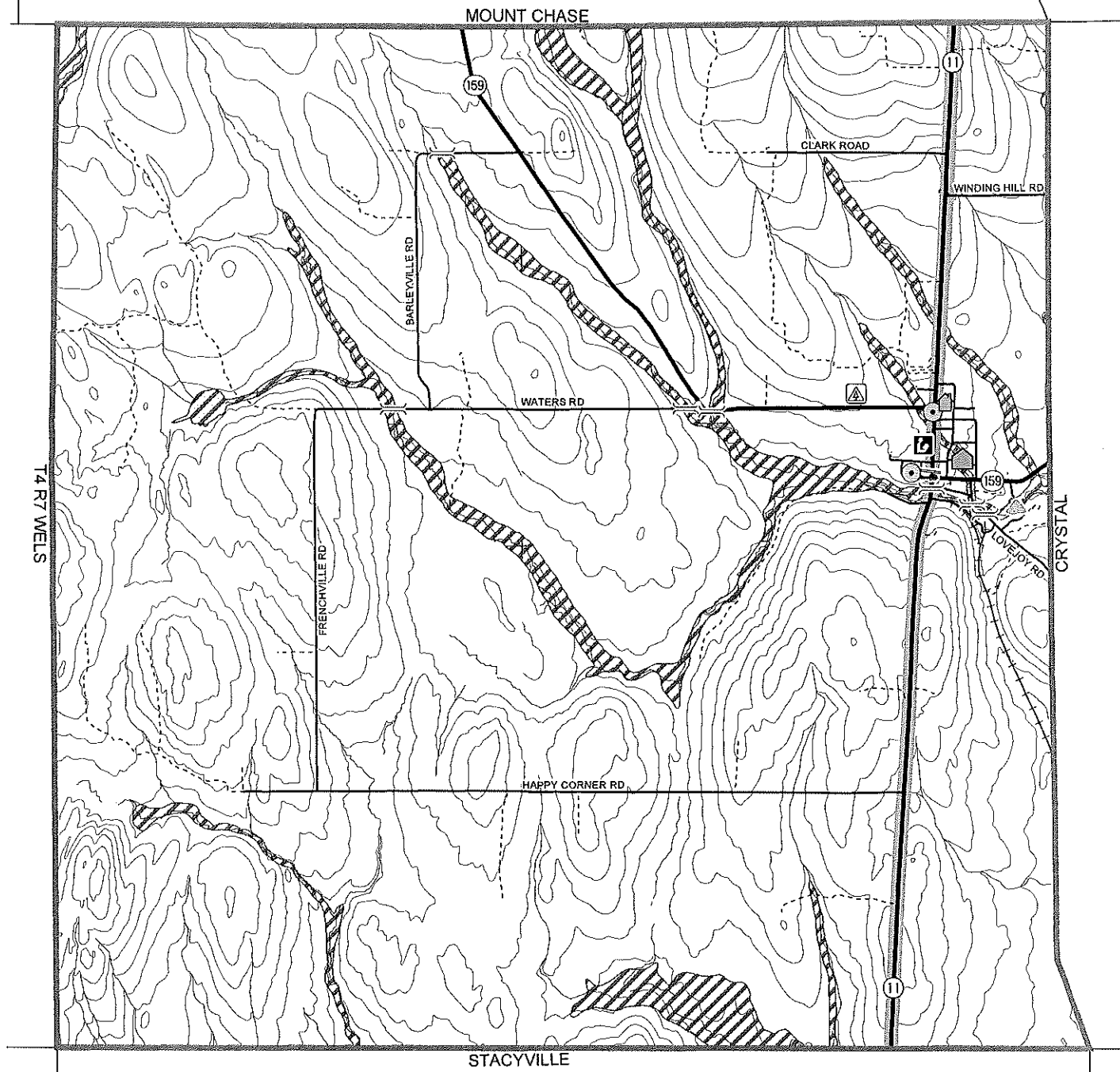
Local Goal

Reduce losses to public and private property caused by inappropriate development through effective planning, preparedness, response and regulation.

Policy	Strategy	Responsibility	Timeframe
Continue to participate in the hazard mitigation planning process at the County level and implement local strategies to enhance preparedness, response and reduce risks to persons and property.	Designate a local person as Hazard Mitigation Coordinator (Officer) with on-going responsibility and create an annual stipend as compensation and to reflect the level of importance of their responsibilities: <ol style="list-style-type: none"> 1. Annual update of local sections of Penobscot County Hazard Mitigation Plan. 2. Coordinate with Moro Plantation and Hersey on Aroostook County's Hazard Mitigation Plan. 2. Keep plan active by implementing specific tasks in the plan. 3. Maintain on-going communication with Penobscot County Emergency Management Agency (EMA) and with State Police, Sheriff's Department Fire, Ambulance, Maine Forest Service and other government services. 	Town Officials	On-going
	Seek grant funding through Maine Emergency Management Agency (MEMA), Hazard Mitigation Program, Maine Office of Community Development- CDBG Program, Maine Department of Transportation, Rural Roads Initiative and other sources to undertake the projects identified in the Hazard Mitigation Plan.	Fire Dept. Highway Dept., Planning Board and Town Officials	On-going

Policy	Strategy	Responsibility	Timeframe
	Maintain and build reserve funds as match for Pre-disaster Mitigation Grant funds for large capital projects and apply for these funds.	Town Officials	2018
	Continue to fund upgrades to town roads targeted in Hazard Mitigation Plan. Keep scope of work manageable	Town Officials and Highway Dept.	2017 and on-going
	Continue to invest in drainage improvements on all roads to mitigate damage caused by runoff and erosion.	Town Officials and Highway Dept.	2017 and on-going
	Work with Eastern Maine Electrical Cooperative and EMERA to complete tree trimming in all areas to help protect power and telephone lines.	Town Officials	On-going
Ensure that new development and improvement to existing properties does not create or contribute to the risk of property damage, personal injury or loss of life.	Continue to enforce the construction standards outlined in the Floodplain Management Ordinance.	Code Enforcement	On-going
	Keep floodplain and shoreland zoning provisions current with State and Federal standards.	Planning Board	2018-19
	Use the building permit review process outlined in the Land Use Plan to educate all floodplain property owners on methods of flood proofing their buildings.	Planning Board and Code Enforcement	On-going
	Communicate with MDEP on storm water management issues and cooperate on enforcement.	Town Officials, Planning Board, and Code Enforcement.	On-going
Ensure the protection of wetlands, floodplains and riparian areas from activities that reduce their capacity to control flooding and erosion.	Strictly enforce floodplain management and shoreland zoning standards that pertain to filling, earth moving and clearing activities.	Code Enforcement	On-going
Protect the capacity of roadside drainage and storm	Continue to work with the Highway Department to improve drainage	Highway Dept. and Town Officials	On-going

drainage systems to handle runoff.	along roads. Follow the 20-year plan for road improvements.		
Policy	Strategy	Responsibility	Timeframe
	Annually identify erosion and runoff problems associated with agriculture and request that landowners contact the USDA-Natural Resource Conservation Service and the Penobscot County Soil and Water Conservation District for assistance.	Planning Board, Code Enforcement, and Town Officials	On-going
Build community capacity to protect public services, shelter areas, and private residences.	Maintain a priority list of facilities that require back-up power and seek Federal and State grant funding for the purchase of generators.	Planning Board, Fire Dept., and Town Officials	2017
	Work with the Maine Forest Service and the Department of Defense's Fire Fighting Property Program (FFP) to obtain federal surplus vehicles for the purpose of fighting wildfires.	Fire Department, and Town Officials	2018 and as needed
	Apply for Volunteer Fire Assistance Program funds through the Maine Forest Service to obtain forest firefighting equipment and/or training.	Fire Department	2018 and as needed
	Publicly post emergency preparedness information that directs citizens to County, State and Federal emergency management websites and other educational resources.	Town Officials	On-going
	Encourage local fuel companies to have auxiliary power that enables them to supply gasoline, diesel, and propane during outages.	Town Officials	2017
	Develop a municipal fuel depot with generator set-up to enhance preparedness.	Highway and Fire Dept.	2017 and on-going
	Work with the Maine Floodplain Management Program to review the Floodplain Maps. Seek assistance to upgrade these maps as needed.	Town Officials, Planning Board	2018 and on-going



Sources: Town of Patten, FEMA/NFIP, USGS, MEDHS, MEDWP, MDOT and MEGIS
 Map created: February, 2005 Revised: June, 2010

LEGEND

INFRASTRUCTURE AND UTILITIES

- State roads
- Town roads
- - - Private roads/Trails
- ▨ Heavy Haul Truck Network
- +— Railroads
- Bridge

NATURAL RESOURCES

- 40 Foot Contours
- Streams
- ▨ Water
- ▨ Flood Zone Area

PUBLIC FACILITIES AND SERVICES

- ▨ Municipal Building/Municipal Garage
- ▨ Recreation Building (Emergency shelter)
- ▨ Patten Memorial Library
- ▨ Patten Lumberman's Museum
- ⊙ Community Public Water Supply
- ⚒ Patten Fire Department
- ⚒ Sand/Salt Shed

The Flood Insurance Rate Map (FIRM) for Patten was published in 9/18/1985.