

H. WATER RESOURCES

1. Purpose

The safety and overall cost of drinking water is an essential component of the overall health of a town. This section will:

- A. present an overview of Castine's water resources;
- B. describe the characteristics, uses, and quality of Castine's significant water resources;
- C. predict whether the quantity or quality of significant water resources will be threatened by the impacts of future growth and development; and
- D. assess the effectiveness of existing measures to protect and preserve significant water resources.

2. Key Findings and Issues Taken Verbatim From the 1995 Plan

As a small peninsula, Castine has no great ponds or other significant fresh water bodies. The primary water supply issue is the adequacy of the public water system serving the village area. Preserving marine water quality is another important issue. While this problem must be approached with other towns on Penobscot Bay, Castine faces particular problems due to overboard discharges adjacent to the brook at Wadsworth Cove.

3. Key Findings and Issues

There have been improvements to the municipal water supply system since the last plan was prepared but the system is operating close to its capacity. The Town has also worked to remove the remaining overboard discharges, but the salt water quality is affected by upstream discharges in other towns.

4. Significant Water Resources

A. Ponds and Watersheds

Castine has very limited surface and freshwater resources. According to the 1995 Comprehensive Plan, there are about eight acres of surface water in town. These water bodies include various fire ponds, the Ice Pond off of Route 166-A, Dunc's Meadow off Route 166, the public water system ponds, and inland wetlands. Castine's watersheds are relatively small.

They all drain into the Penobscot Bay, either directly or via the Bagaduce River (see Map -).

B. Freshwater Wetlands

Castine's three freshwater wetland areas are shown on Map - and include: Dunc's Meadow, the Ice Pond off 166-A, and an interior area between 166 and 166-A. Freshwater wetlands are defined as those areas commonly referred to as swamps, bogs, or marshes that are inundated or saturated by surface or ground water. This inundation occurs at a frequency and for a duration sufficient to support a prevalence of wetland vegetation typically adapted for life in saturated soils. Wetlands larger than 10 acres ("designated wetlands") are subject to the shore-land zoning setback standards. Wetlands 0.1 to 10 acres in size are subject to regulation by the Maine Department of Environmental Protection under the Natural Resources Protection Act (NRPA).

C. Coastal Wetlands

Castine's coastal wetland areas are the British Canal area, as shown on Map -, and the Bagaduce and Penobscot shorelines. The NRPA defines coastal wetlands as tidal or sub-tidal land. They are identified by the presence of salt-tolerant wetland plants or the presence of a tidal debris line, and include mudflats, beaches, and salt marsh. Coastal wetlands serve as nurseries and food sources for larger fish and provide wintering areas for waterfowl and staging areas for migratory shorebirds. They protect coastlines from erosion and provide open space for recreation and fishing. All coastal wetlands are protected by NRPA, regardless of size; but it is also important to protect the upland areas draining into coastal areas.

D. Ground Water

Castine has two sources of ground water. One is a sand and gravel aquifer located on the eastern side of the on-neck area (see Map 3). The second is bedrock wells, which supply the rest of Town both on and off-neck.

Ground water is defined as subsurface water found in the saturated soils and water bearing bedrock of the earth's surface. Its upper level, which rises and falls seasonally, is called the water table. A bedrock aquifer is a rock formation that contains recoverable volumes of ground water. All ground water is important to a community as a source of drinking water, and aquifers are especially important, while also especially vulnerable to pollution from surface and subsurface sites.

The Maine Geological Survey data indicate that wells in the sand and gravel aquifer have a combined yield of about 20 gallons per minute (gpm).

Since the Maine Geological Survey data were published in 1981, more detailed water supply studies have been done. The 2007 studies indicate the five bedrock wells serving the municipal water system yield between 40 gpm and 70 gpm. The rest of the town depends on individual bedrock wells for its water. There has been no comprehensive analysis conducted on the status of private wells in the off-neck area.

5. Flood Hazard Areas

Flood hazard areas, as mapped by the federal government, are shown on Map -. The Town has enacted a flood plain management ordinance, which sets development standards for land uses within flood-prone areas. By having a flood plain management ordinance that meets state and federal guidelines, property owners in Castine are eligible for flood insurance. According to the State Planning Office, there are no flood plain-related problems, and Castine's ordinance currently meets all state and federal standards.

6. Public Water Systems

Data from the Maine Drinking Water Program indicate there are two public water systems in Castine. These are the Castine Water Department and the Hancock Village Mobile Home Park as shown on Map -. Public water systems are defined as those that serve a given number of the general public even if they are not publicly owned. They may be as large as the system serving the village area or as small as one serving a restaurant. These systems are subject to various state regulations and reporting requirements.

Map - shows the "public water supply source water protection area." This area is defined as the "area that contributes recharge water to a surface water intake or public water supply well." Operators of these systems, per state law, must be notified of land use applications that could affect the source water protection area. This allows the operators to participate in the municipal decision making process and helps reduce the risk of contamination to public water supplies.

The Hancock Village Mobile Home Park well is a bedrock well located on Simpson Road adjacent to its intersection with the Shore Road. According to data provided by the Maine Drinking Water Program, the system meets basic water quality standards, and has a low existing risk of acute contamination.

7. Water Quality

The DEP classifies all surface water in Maine. The classification system sets the standards allowed for discharges of pollutants and establishes water quality goals for the state. The system is used to direct the state in its management of surface waters and, where the standards are not achieved, direct the state to enhance the quality to meet the standards.

All salt waters adjacent to Castine are presently classified "SB." This is the second highest classification for salt waters in the state. It is applied to waters which are suitable for recreation, fishing, aquaculture, the propagation and harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation and navigation and as a habitat for fish and other marine and estuarine life. New discharges that would cause the Department of Marine Resources (DMR) to close shellfish areas are not permitted in Class "SB" waters.

The area between Morse and Wadsworth Cove does not presently meet this water quality classification. The DEP believes this may be due to overboard discharges and combined sewer overflows into the Penobscot River. This area is also discussed in the Marine Resources chapter. There is no evidence from either DEP or local records of any water contamination in Castine's freshwater resources.

Castine's water quality is also monitored by the volunteer group Bagaduce Watershed Association. In addition to monitoring water quality throughout the watershed, it is also active in reporting on other watershed issues. These include proposals for tidal power and aquaculture. It coordinates with other water quality groups in Penobscot Bay.

The DEP has classified Castine's ground water as GW-A. This is the highest DEP classification for ground water. DEP standards mandate that these waters be of such quality that they can be used for public water supplies. They must also be free of radioactive matter or any matter that affects their taste or odor. There is no evidence of Castine's ground water failing to meet these standards.

One of the wells serving the public water system exceeded the arsenic level standard when the state enacted stricter standards in 2006. A treatment system was installed in 2007 that addressed this problem.

8. Existing and Potential Threats to Water Resources

There are two different types of water pollution: point source, and non-point source. Point source pollution is that which comes from a specific source, such as a pipe, and can easily be identified, measured, licensed, or removed. Non-point pollution is much broader and more difficult to identify. It ranges from leaking gas tanks, to erosion, to storm water runoff; along with agricultural, lawn, and forestry runoff.

The major point source in Castine is the pollution control facility. As mentioned in the Public Services and Facilities Chapter E, the plant exceeds capacity during and after heavy rains. According to the DMR, this discharge may be one of the major reasons for the water quality problems in Hatch Cove. The Town is upgrading the plant to handle additional capacity. Another problem may be overboard discharges (OBD's). The town has worked to remove or improve

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OBD's since the 1995 plan was prepared. As of 2008, Castine had reduced the number of OBD's to three, but there were still five in Brooksville and four in Penobscot. Discharges from these adjoining towns affect Castine's salt water quality.

There are no DEP records of any non-point sources threatening surface water. Non-point sources are more likely to occur adjacent to commercial and industrial operations or where there is a large extent of impervious surface. Since such areas in Castine are relatively limited, the town is not likely to have the problems faced in more developed communities. There is, however, a need for better policing of oil spills and other discharges in the harbor.

There is no boat wastewater pumpout facility in Castine. Given the continued increase in boating traffic, this will present a serious problem for the future, unless steps are taken to remedy this. The nearest facility is currently located in Belfast.

Non-point sources are a potential threat to ground water. Since it takes much longer for ground water to cleanse itself than surface water, it is very important to avoid contaminating ground water. While it is very costly to restore a lake or stream, the cost of cleaning up ground water is usually prohibitive if it can be redeemed at all. Stricter state standards enacted since 1995 have eliminated many old underground storage tanks (USTs) or required their replacement, thus reducing this threat. In addition, there has been concern that the use of pesticides on-neck (lawns, golf course, etc.) could contaminate the ground water supply. The Town is continuing to investigate this issue.

According to the Source Water Assessment Program study prepared for the Castine Water Department, no significant land use threats were identified during a reconnaissance of the watershed surrounding the Battle Avenue ponds. The watershed is largely protected by a combination of water department ownership, conservation trust protection and source water protection zoning. There is presently good water quality from this source. It is, however, important to monitor aquatic plant growth and natural material accumulation as these factors may alter water quality in the future. The status of the water department is discussed in greater detail in the Public Facilities and Services chapter.

9. Regional Considerations

The major regional water resource issue in Castine is the need for regional cooperation in protecting Penobscot Bay and the Bagaduce River. Overboard discharges from both marine and land-based systems in adjoining towns that threaten Castine's water resources are a serious problem.

10. Adequacy of Existing Protection Measures

Castine's zoning ordinance has a source water protection overlay district. In addition to prohibiting many uses that could threaten water quality it has strict groundwater assessment requirements for uses that are subject to site plan review. Both the site plan review standards and the subdivision ordinance deal extensively with water quality impacts. This ordinance is under review in 2008 and may have been changed by the time this plan is published.

11. Adequacy of Supply

Although a low rate of residential growth is projected for Castine, the municipal water system will limit future development in its service area. As of 2008, the system was operating near capacity, with a balance between MMA usage in the winter and seasonal residents in the summer months. Any disruption of this balance will result in a water shortage.

The status of water supply in the off-neck area is not known. More assessment is needed before it can be determined if water supply problems are likely to emerge in the off-neck area.

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MARINE DISCHARGES AND PUMPOUT STATION

BALANCE OF SUMMER/WINTER

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