

Chapter H

Water Resources

1. Purpose

This chapter presents an overview of Brooksville's water resources, including the town's drinking water. Specifically, this chapter:

- a) describes the characteristics, uses, and quality of Brooksville's significant water resources;
- b) predicts and considers potential negative impacts to water quality caused by future growth and development; and
- c) assesses the effectiveness of existing measures to protect and preserve Brooksville's water resources.

2. Key Findings and Issues

Brooksville residents depend primarily upon bedrock wells for their drinking water. Some wells have high levels of iron, arsenic and radon requiring on site water treatment. Ten percent of respondents to the 2018 survey felt potable water needs improvement or attention while an additional 23% recommended further study. Sixty-eight percent of the survey respondents said access to fresh water ponds is adequate compared to 22% in 2006. This is probably the result of the increased access afforded by the Walker Pond Landing – a joint effort of Brooksville and Sedgwick. Callahan Mine and the municipal salt/sand pile are still considered possible threats to groundwater. No other serious threats to the town's ground water resources have been identified.

In addition to its largest surface water resources (which are marine and estuarine), there are four freshwater great ponds in town. The Callahan Mine Site is a known source of pollution in Goose Pond, and has been declared a federal superfund site. Remediation is ongoing. As of 2021, Brooksville has only one active overboard discharge listed by Maine DEP, an approved summer-only discharge. All others in the town have been eliminated.

3. Key Findings & Issues from the 2006 Plan

In 2006 there were eight overboard discharges in town and the Callahan mine was leaching heavy metals into Goose Pond. In three separate questions, over 90% percent of respondents favored ordinances to protect aquifers, streams and ponds. Wetlands were favored for protection by 85 percent. Ten percent said that potable water was a major problem with an additional 26 percent indicating it is a minor problem. Only 22 percent of survey respondents felt that residents have adequate access to Brooksville's ponds. Sixty-one percent indicated that access is "poor" while the remaining 17 percent checked "don't know/not sure."

4. 2018 Public Opinion Survey Results

Ten percent of all respondents felt potable water needs improvement or attention, while an additional 23% recommended further study. Sixty-eight percent of survey respondents said access to fresh water ponds is adequate, compared to 22% in 2006. This undoubtedly is a result of increased access afforded by the Walker Pond Landing, which opened to the public in 2012.

5. Surface Water Resources

Fresh Water Resources:

There are four great ponds (naturally made fresh water ponds greater than 10 acres) in Brooksville. There are about a dozen small ponds, some of which are man-made. These small ponds are not subject to state laws such as the Natural Resources Protection Act.

**Table H-1
Characteristics of Brooksville's Ponds**

Name	Acres	Elevation (Feet)	Direct Drainage Area (Acres) *	Access
<i>LARGE PONDS</i>				
Goose Pond	107	6	1,209 (100%)	Public access at state park
Parker Pond	69	62	2,023 (100%)	No formal public access
Snake Pond	25	65	254 (100%)	No formal public access
Walker Pond	685-	19	1,283 (45%) in Brooksville	See Section I.4.C for more information on access to Walker Pond.
			1,539 (55%) in Sedgwick	
<i>OTHER NAMED FRESHWATER AREAS</i>				
Breezemere Dike	4	3	150 (100%)	Just off Breezemere Road. Sometimes used for skating.
Fresh Pond	8	110	55 (100%)	State park-- access via trail
Lily Pond	2	170	63 (100%)	No formal public access
Round Pond	3	170	15 (100%)	No formal public access
<i>Maine Department of Environmental Protection</i>				

**Direct drainage area does not include the area of the pond itself or other ponds with associated drainage areas that may feed into the pond.*

The only Pond for which the DEP keeps significant water quality data is Walker Pond. Water quality monitoring data have been collected at Walker Pond since 1980. In summary, the water quality has been found to be above average. It has very clear waters averaging about 20 feet to a maximum depth of 47 feet.

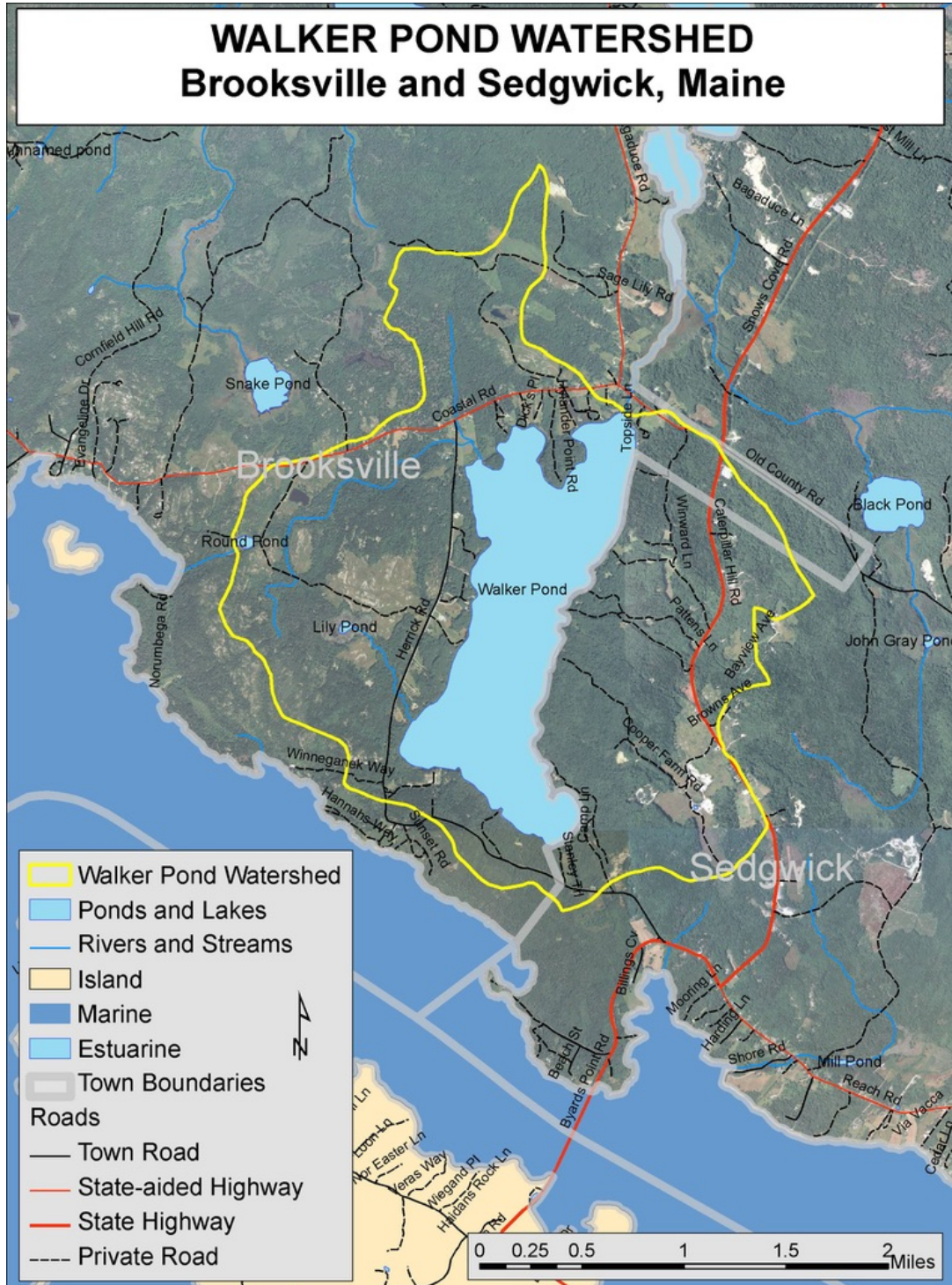
Susceptibility to phosphorus loading and other contaminants has been identified by the DEP as an important factor in water-body quality. Phosphorus is a naturally occurring element that clings to soil particles and organic matter. Increasing amounts of phosphorus runoff into a lake will cause algae to become a nuisance and negatively affect cold-water fish. An abundance of algae turns the lake green and blocks sunlight to deeper levels. This process can destroy the water quality of the lake.

The DEP has identified Walker Pond as "moderate/sensitive" in its vulnerability to phosphorous levels. This rating is derived from many variables such as the extent to which the water is renewed during rainstorms, and development of housing along the shore. The moderate/sensitive rating indicates that Walker Pond has a relatively high potential for recycling phosphorous from bottom sediments. The DEP estimates that the pond can handle 20 pounds of phosphorous from Brooksville's share of the watershed each year. That means that only 0.16 pounds of phosphorous per acre should be exported to Walker Pond from Brooksville. This same number per acre applies to the Sedgwick portion as well.

DEP standards for the level of protection are advisory only but can be used as a planning guide for allocating or limiting development in the watershed. Many communities have taken measures to regulate phosphorus runoff resulting from residential development and related activities in their watersheds.

Walker Pond is a state-stocked brown trout fishery and is also an important resource for other recreational uses. Walker Pond is also one of the few potential surface water sources of drinking water in Brooksville. As such, it should be carefully protected. The 5.6 sq. mi. Walker Pond Watershed has been mapped by the Friends of Walker Pond. About half of the area of the watershed is within the Town of Brooksville. The border of the watershed in Brooksville extends, at its maximum, more than a mile toward the west and northwest from the shore of the pond. See Map H-1

Map H-1



Source: Lake Stewards of Maine: LakesofMaine.org
based on data from survey by Friends of Walker Pond

Brooks: With its peninsular geography, Brooksville has many small, relatively short brooks from its interior to the shore. Billings Brook, Shepardson's Brook, and Mill Stream (Parker Pond Outlet) are considered significant fisheries habitat by the Maine Department of Inland Fisheries and Wildlife that are worthy of increased local protection. See Table H-2 for a listing of streams.

Brooksville's one "river", the Bagaduce, is actually a saltwater body. The Route 175/176 bridge culvert creates a reversing falls with the changing of the tides. (In historic times a dam and a mill were located there to take advantage of the tides.) The upper Bagaduce (south of the bridge and closer to Walker Pond) has a lower salt content due to freshwater input and the restricted tidal influence. In addition to recreation, these waters are currently used for raising oysters under aquaculture leases.

**Table H-2
Characteristics of Brooksville's Freshwater Streams**

Name	Length (miles)	Terminus	Comments/Access
Benson Brook	0.5	Smith Cove	
Billings Brook	0.8	Walker Pond	Significant fisheries habitat
Jerry's Brook	0.6	Meadow Brook	
Lily Pond outlet	0.6	Walker Pond	Begins at Lily Pond
Marsh Creek	1.2	Goose Pond	Begins at Fresh Pond
Meadow Brook	2.9	Parker Pond	Begins at Snake Pond
Mill Stream	1.3	Bagaduce River	Significant fisheries habitat Begins at Parker Pond
Round Pond outlet	0.3	Buck's Harbor	Begins at Round Pond
Shepardson Brook	4.2	Wasson Cove	Significant fisheries habitat
Walker Pond outlet	0.7	Bagaduce River	Begins at Walker Pond
<i>Source: Maine Department of Environmental Protection</i>			

Marine Water Quality:

The DEP classifies all surface water in Maine, both fresh and saltwater. These classifications set the standards allowed for discharges of pollutants. The majority of waters in the state, including those adjacent to Brooksville, are classified "SB," which is the second highest classification and denotes that the water is swimmable and fishable. Per DEP standards, habitats in these waters "shall be characterized as unimpaired." No discharges that would cause

closure of open shellfish areas are permitted. Dissolved oxygen contents are set at 85 percent. For more information on marine water quality, see Chapter G (Marine Resources).

Threats to Surface Water Resources:

There are two types of pollution that threaten surface water: point and non-point. Point pollution is attributable to a specific source such as a pipe discharging into a stream. Non-point pollution comes from a general source such as storm water runoff that carries oil spilled on a road into a stream. The U.S. Environmental Protection Agency (USEPA) placed the Callahan Mine site in Harborside on its Superfund list for clean up because it is considered a threat to nearby water resources. The Callahan Mine Site is a former zinc-copper open pit mine adjacent to and beneath Goose Pond, a semi-tidal estuary. Operations at the mine ceased in 1972, leaving several piles of tailings and other waste. The tailings piles leach acidic and metal-containing water onto the site and into Goose Pond, which samples show is contaminated with zinc and copper. The EPA expects to complete stabilizing and installing a cover system on the tailings pile in 2021. They currently are awaiting funding for the sediment dredging portion of the cleanup.

The only other known point source of pollution in Brooksville is a summer-only overboard discharge that is slated for near-term removal. .

Access to surface water resources:

Access to Walker Pond represents an accomplishment of a goal established in the town’s 2006 comprehensive plan. Working jointly with the town of Sedgwick, and with the help of a grant from the state, road access and a boat launch were established on the east side of the pond. Working together the two towns were able to add a beach and picnicking areas for families, thus providing the opportunity to swim, fish, boat and ice skate.

Recently, the Maine Coast Heritage Trust offered Sedgwick and Brooksville the opportunity to own and manage a park at the outlet dam for Walker Pond as an additional lakeside public area. This has been accomplished. The considerable necessary restoration work was done by MCHT at no cost to the Town.

Access to marine waters is covered in Chapter G (Marine Resources) and Chapter F (Recreation).

6. Ground Water Resources

As mentioned in Chapter C (Housing), Brooksville residents and businesses depend on individual wells for their water supply. Sand and gravel aquifers yield large quantities of water to wells, but Brooksville’s geology includes no sand and gravel aquifers. Rather, most wells in Brooksville are drilled in bedrock. Bedrock wells generally yield from about 10 to 50 gallons per minute (gpm). Normally, a well yielding about 1-5 gpm is considered sufficient for domestic use.

Seven wells in town are listed as vital, high-demand wells by the Maine Drinking Water Program due to the fresh water demand placed on them. These wells serve the school, restaurants and inns and other places that cater to the public, and are listed in Table H-3. There are no major current problems in Brooksville with ground water supply. However, ground water resources are notoriously unpredictable and new development might create problems for existing wells.

**Table H-3
Wells in Brooksville Listed in the Maine Drinking Water Program**

ID Number	Owner	Location	Risk Type and Rating		
			Geology	Area	Control
23427101	Buck's Harbor Market	6 Cornfield Hill Road	moderate drainage	high	moderate
2140101	Hiram Blake Camp	220 Weir Cove Road	moderate drainage	low	low
MD0000123	Elementary School	Route 176	moderate drainage	moderate	high
2136104	Oakland House Inn	435 Herrick Road	moderate drainage	moderate	moderate
2136105	Oakland House Inn	435 Herrick Road	moderate drainage	low	moderate
2136106	Oakland House Inn	435 Herrick Road	moderate drainage	low	moderate

Source: Maine Department of Environmental Protection Drinking Water Program

Ground Water Quality:

The DEP has rated Brooksville's ground water as GW-A. This is the highest DEP water-quality classification, and it applies to all ground water in the state unless specifically noted otherwise. DEP standards mandate that these waters be of such quality that they can be used for public water supplies. They shall, per DEP standards, be free of radioactive matter or any matter that affects their taste or odor. Brooksville's 1980 Comprehensive Plan noted that some of the wells in West Brooksville had high iron content while some in the Goose Pond area are high in sulfur. Recent changes to water testing standards have caused the detection of naturally high arsenic levels and radon in some private wells. Well owners should take advantage of more accurate available testing methods to assure that their water is safe to drink.

Threats to Ground Water:

Given the low incidence of non-point pollution in Brooksville and the overall low density of the population, the ground water supply is generally considered safe. Two sites, the Callahan Mine and the municipal salt/sand pile are considered possible threats to groundwater.

The Maine DEP deemed the salt/sand pile on Route 176 below the town house safe. The town has established a reserve account to construct a salt shed and is also currently investigating alternative methods such as brine and modifying the sand-to-salt ratio to maintain safe winter roads, while continuing to protect the ground water.

As mentioned before, the Callahan Mine is on the US EPA Superfund list for cleanup. The Agency for Toxic Substances and Disease Registry (ATSDR), an agency of the U.S. Department of Health and Human Services, studied groundwater near the Callahan Mine site in Harborside for potential exposure to toxins via various pathways including drinking water. ATSDR determined that contaminants from the waste piles or other source areas could infiltrate into the groundwater beneath the site. If people used this groundwater for drinking, they could be exposed to contaminants. A few private drinking water wells are near the site. All samples of these wells to date show that no contaminants are present above drinking water comparison values. Therefore, this pathway is not expected to lead to any adverse health effects and has been dropped from further consideration by the agency.

7. Assessment & Adequacy of Existing Efforts to Protect Brooksville's Water Resources

If the moderate rate of growth projected for Brooksville proves to be correct, current drinking water supplies should be adequate for the foreseeable future. The only potential problem would be threats to individual wells from contamination. The Walker Pond watershed will be studied for special protection should the town ever choose to develop the pond as a water source to augment groundwater in areas that develop a need.

Brooksville's current measures to protect water resources consist of the Shoreland Environmental Protection Ordinance approved in 2016, the subdivision review standards, and the requirement for all new structures to obtain a Subsurface Wastewater Disposal permit from the Code Enforcement Officer, as well as a plumbing permit. The current site plan review ordinance has standards to protect against water pollution, assure adequate sewage disposal and storm water drainage. If the town decides to enact a town-wide land use ordinance, it could develop additional measures to protect water quality. These could include standards for maximum impervious surface, drainage provisions, and storage of pollution-causing materials.

Non-government organizations currently provide assistance that is welcomed as an essential means of preserving the quality of significant water resources in Brooksville. The Friends of Walker Pond (FWP), the local lake association formed to study and make recommendations related to maintaining the quality of the pond and its wildlife, currently monitors water quality in Walker Pond. Test reports indicate that despite high clarity ratings, the pond has limited ability to sustain cold water fish due to dissolved oxygen depletion, and that the lake has

“moderate/sensitive” vulnerability to phosphorous levels. The latest water quality survey is available on the town website. In 2019 the FWP sponsored a watershed survey. Under the guidance of the Maine DEP and the Lake Watershed Resource Management Association, and with help from the Sedgwick Brooksville Joint Landing Committee and local shore landowners, a physical survey of the entire Walker Pond watershed was conducted and documented (see Map H-1). Individual recommendations were made, but no significant sources of pollution were found. The survey summary is available on the town website.

The Bagaduce Watershed Association is another local non-profit organization that helps to promote and protect the Bagaduce River and its watershed.

The Maine Center for Coastal Fisheries working with the Tri-Town Alewife Committee (Brooksville, Penobscot, Sedgwick) has been systematically working on projects to restore the migration of alewives to local ponds. With financial help from the Maine Coast Heritage Trust, alewife access to Walker Pond has been enhanced. A recreational park has been created at the Mill Pond with historical signage and parking, and the dam has been reinforced and modified for better flow control. The outlet at Parker Pond has also been modified to encourage the return of the alewife migration and is scheduled to be finished in 2021. Alewives are an important part of the freshwater ecosystem since they are a food source for other fish and wildlife and act as host for freshwater mussel larvae. The mussels, when mature, filter impurities from the water.

8. Regional Issues

There are no immediate regional ground water resource issues facing Brooksville. The town does not share any sand and gravel aquifers with a surrounding town. Given the moderate rates of growth projected for the town, there is no foreseeable likelihood of the town needing to tap into a public water system from a surrounding town. Although Walker Pond is entirely in Brooksville, much of its watershed is in Sedgwick. To adequately protect the resource in the long term, the two towns will need to continue to work together.

9. Goals & Objectives

GOAL: Protect Brooksville's Vital Water Resources for Long-term Health			
Policy	Strategy	Responsible Party(ies)	Timeline
Pollution Source Management	Ensure town regulations include adequate provisions to manage point and non-point pollution in conjunction with Sedgwick.	Select Board, Planning Board, Code Enforcement Officer	Immediate, ongoing
Ground water protection	Ensure compliance with local and state regulations regarding groundwater protection.	CEO	Immediate, ongoing
Ensure continued adequate access to fresh water facilities	Establish a reserve account to maintain fresh water access facilities.	Select Board	1 year
Maintain optimal water levels at Walker Pond for multiple objectives	Establish procedures to monitor and regulate water levels in Walker Pond.	Fish Committee (Brooksville members of Tri-Town Alewife Committee)	Ongoing
Protect Walker Pond habitat from invasive species	Reinstate an inland harbor master position to oversee operation of the Courtesy Boat Inspector program to control invasive species; monitor Walker Pond water level; regulate recreational use of landing; plan for increased parking and picnic areas as required.	Select Board's designee(s)	3-5 years
Protect habitat in sensitive riparian areas delineated by the DEP	Secure public access to and create a resource protection buffer around habitats delineated by DEP.	Select Board and Planning Board in conjunction with Hancock County Planning Commission.	5 years

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Policy	Strategy	Responsible Party(ies)	Timeline
Educate new residents on well water monitoring	Provide new residents with information on how, why, and when to monitor their wells.	CEO	Immediate and ongoing
Educate new residents within the Walker Pond watershed on ways to protect the pond	Provide information on the extent of the watershed, types of common pollutants, and how pollutants can migrate from surface runoff	Friends of Walker Pond	Immediate and ongoing