



CHAPTER 7: NATURAL RESOURCES AND WATER QUALITY

WORKING DRAFT (9/8/23)

This document is presented in its current form as a preliminary draft for informational purposes only. It is intended to provide an overview of the proposed content and the direction of the Comprehensive Plan. Please note that this draft is subject to further editing, revisions, and updates.

A public meeting is scheduled for September 23rd, during which community feedback will be solicited and considered. Following this meeting, the document will undergo additional refinement based on the input received. This refinement process may include the incorporation of photos, graphics, and other visual elements to enhance clarity and understanding.

As a result, the information contained in this draft may evolve, and new content may be added or modified to accurately reflect the goals, aspirations, and needs of the community. We encourage all stakeholders to provide comments, either in written form or at the Public Workshop, as your input will play a vital role in shaping the final version of the Comprehensive Plan.

We appreciate your understanding of the dynamic nature of this planning process and your active participation in creating a comprehensive plan that best serves the interests of our community.

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NATURAL RESOURCES AND WATER QUALITY

Shelter Island's irreplaceable natural resources include lush forests, beautiful bays, shorelines, and wetland areas. These resources are not just assets; they are interconnected ecosystems which define the Island's character, shaping its past, present, and future. Maintaining these assets will require an enduring commitment to stewardship and sustainability.

This chapter discusses the various natural elements such as the woodlands that shelter wildlife to the intricate wetlands that filter rainwater. Each component plays a role in preserving biodiversity and maintaining ecological harmony. The waters that cradle the Island are also vital for sustenance, recreation, and the Island's identity.

Addressing water quality and quantity is a critical component of any comprehensive plan, but especially for areas like Shelter Island where natural resources, ecosystems, and community well-being are intimately tied to the health of water systems. Water availability is a key factor when considering current and future development needs. Balancing development with available water resources is crucial to avoiding contamination, over-extraction and depletion of water sources.



SUMMARY OF KEY FINDINGS

While the quantity of Shelter Island’s water supply is sufficient for its needs, the quality of the water is highly vulnerable to contamination, and significant actions are needed to preserve it.

Depending on location, the Island’s water quality is threatened by nitrate contamination from septic systems, saltwater intrusion, and other pollutants. The decentralized nature of both the Island’s water supply and wastewater treatment make comprehensive solutions challenging, but the Town and County have identified a range of strategies that should be pursued through collaboration with various governmental, nonprofit, and private partners. Protecting the town’s water supply will require continual, diligent action at all levels.



The Island has an array of ecological resources of statewide significance, especially in the Mashomack Preserve and nearby areas, and the habitats of designated species must be protected.

Land development and sea level rise have substantially reduced and degraded the habitats of many of these species. While many natural areas of Shelter Island are also attractive for recreational purposes, these demands need to be balanced with protection of sensitive ecological assets.



SUMMARY OF KEY FINDINGS

Shelter Island is vulnerable to invasive species including plants and insects which can have significant ecological, public health, and economic impacts.

One of the most significant issues is the proliferation of ticks and various tick-borne illnesses, which pose serious health risks to all residing on and visiting the Island. The proliferation of deer also poses a hazard to visitors and vehicles. Managing this issue will require continued efforts by the entire community. It is also anticipated that climate change will exacerbate the issue of invasive species as changes in temperature and precipitation patterns may create more favorable conditions for certain species to expand their range, possibly crowding out natives.



Most areas of Shelter Island are not vulnerable to flooding, but sea level rise is accelerating and will bring major impacts.

Climate change will see rising temperatures and more frequent droughts, and an increase in the number and severity of storms and flooding. Although near-term flooding impacts are largely limited to low-lying areas, over time, additional waterfront facilities, roads, and natural areas along the coast will become increasingly affected. This includes impacts to the ecological function and visual character of coastal marshes and mudflats, which will exacerbate saltwater intrusion into the aquifer in low-lying coastal areas.



EXISTING CONDITIONS: NATURAL RESOURCES

Geology and Geography of Shelter Island

According to the Group for the East End, Shelter Island is composed of bedrock overlaid with a sedimentary sand formation deposited at the end of the last ice age. Geologists have identified six geological units, as shown in the graphic below. The soils that formed on top of this geological layer cake are composed entirely of the Montauk-Haven-Riverhead Association soils, which are characterized as deep, well-drained to moderately well-drained soils with a moderate texture. These soils supported agriculture on the Island long before the first European settlement in the 17th Century.

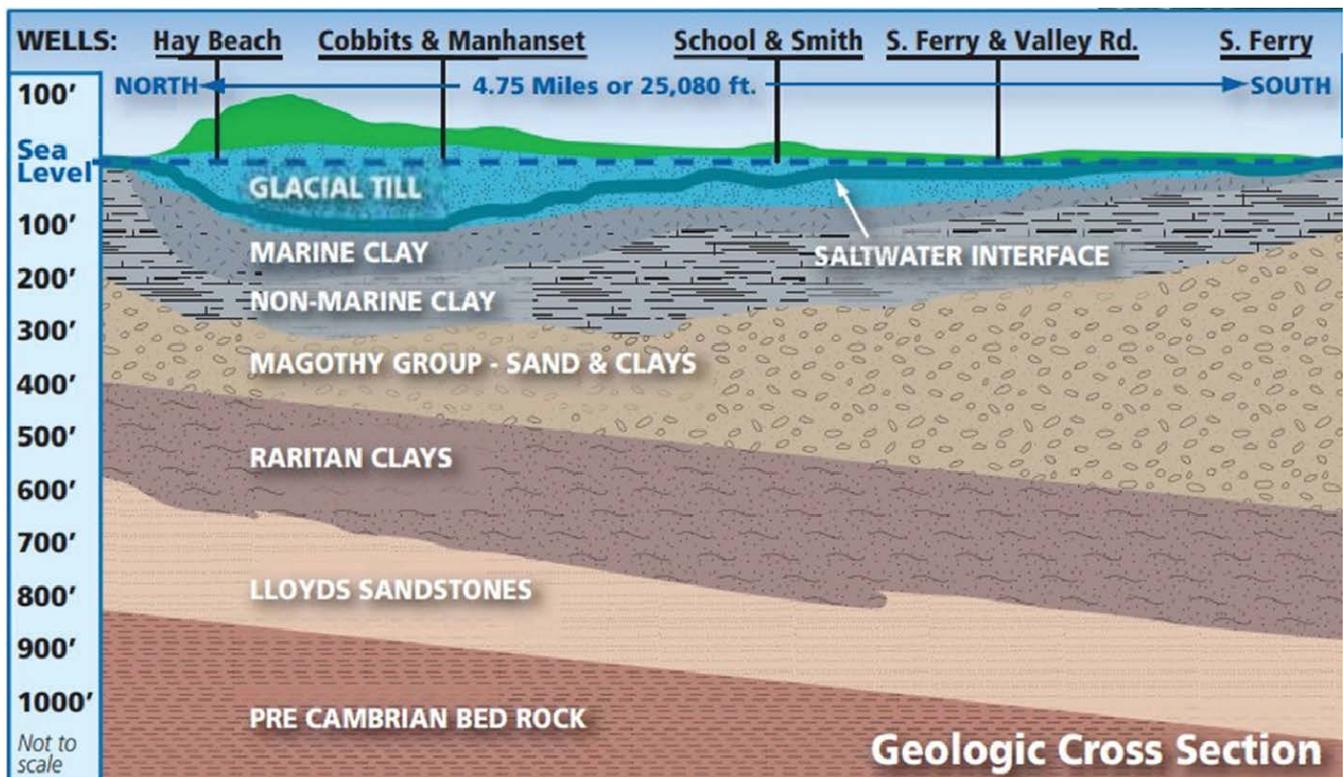
Topography, Drainage and Hydrology

The hilly landscape shaped by the glaciers ranges from 180 feet above sea level on the bluffs in the northwestern part of the Island to as much as 40 feet below sea level in isolated depressions found across Shelter Island. Water

drains quickly into the gravelly soil. The 2014 Watershed Management Plan identified 64 distinct sub watersheds on the Island, ranging from less than 3 acres to over 240 acres in size.

The interior glaciation left a number of small kettle hole ponds. Water draining to these and other low areas on the interior of the Island creates wetlands, including both open water and vegetated marsh and swamp, that are protected by state and federal law. The New York Department of Environmental Conservation (NYSDEC) has identified 70 freshwater wetlands totaling some 105 acres. There are likely other smaller seasonal wetland areas, and whether or not wetlands have been mapped previously, landowners must survey and protect wetlands on their property as part of most site improvements or construction projects.

Shelter Island is surrounded by marine surface waters: harbors, coves, sounds and bays, and there are several tidal creeks and estuarine marshes along the coastline.



A N-S cross section through the Island showing its underlying geology and the saltwater interface

Source: Group for the East End

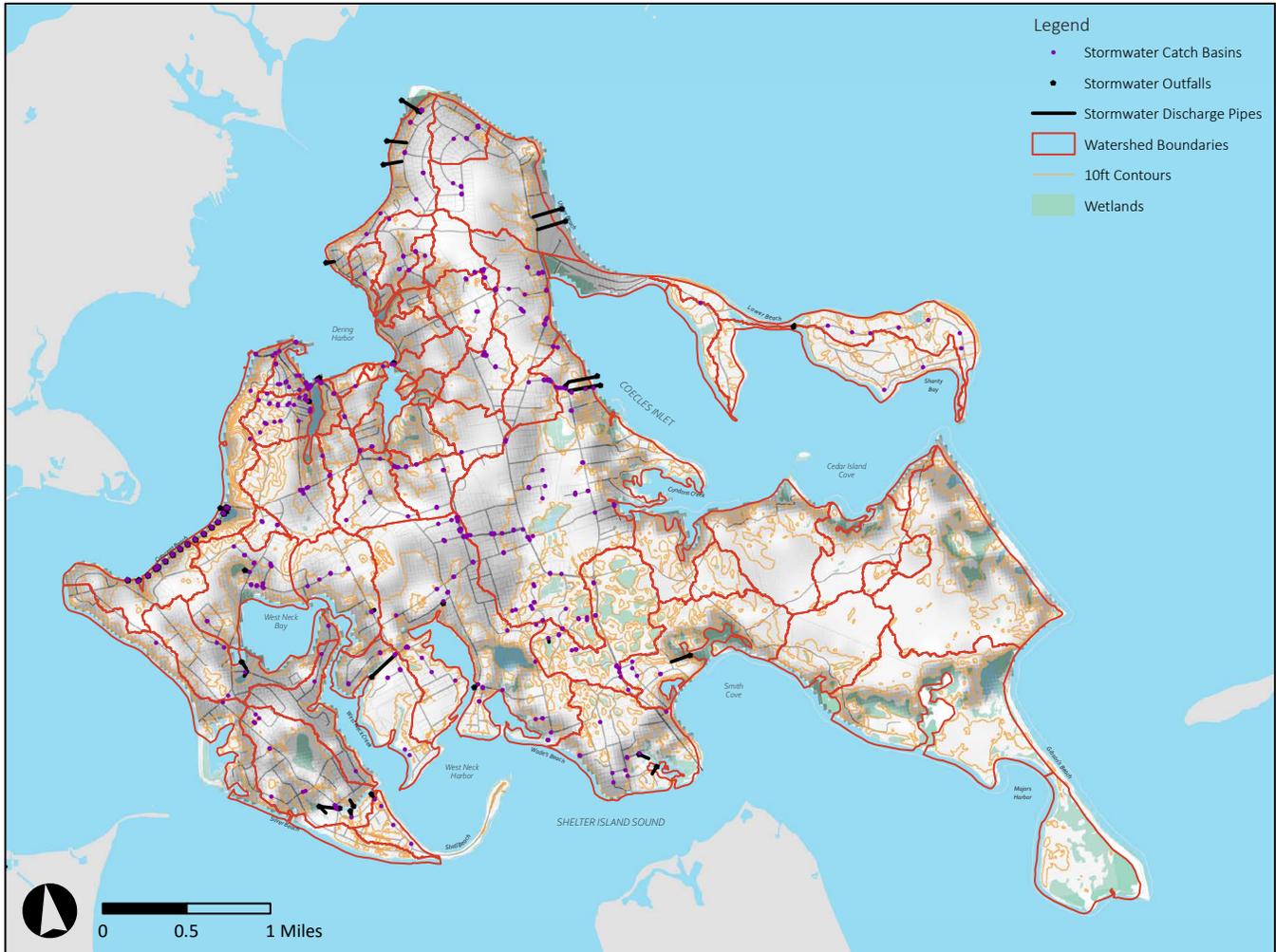


FIGURE 9: STORMWATER AND SURFACE HYDROLOGY

Source: Data source: NYS Department of Transportation, Main Street GIS, and Microsoft
 Map prepared by Dodson and Flinker, Inc. and Larissa Brown + Associates, LLC

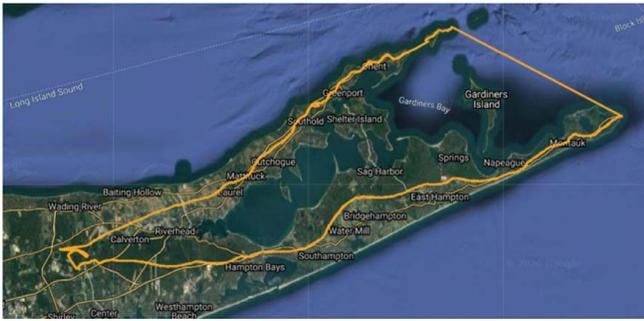
The Island’s complex and dynamic coastline has a diverse collection of marine environments, ranging from wave-wracked rocky beaches at the base of bluffs to quiet inlets rich with plant and animal life. Continually shaped by tides, storms, and the movement of marine sediments, the beaches, mud flats, and marshes shift and change over time.

Shelter Island & the Peconic Estuary

The Peconic Estuary is comprised of more than 158,000 acres of water formed into more than 100 distinct bays, harbors, coves, marshes, and tributaries. Draining into this rich marine environment is a watershed of some

125,000 acres of land, with a year-round population of 100,000 people; at the heart of all these lies Shelter Island.

The Peconic Estuary was named an Estuary of National Significance by the U.S. Environmental Protection Agency (EPA) in 1992. This inaugurated the Peconic Estuary Program (PEP), a coalition of local, state and federal agencies; governments; nonprofit environmental groups; institutions and private citizens; supported by funding under the Federal Clean Water Act. Now known as the Peconic Estuary Partnership, the initiative prepared a new Comprehensive Conservation and Management Plan (CCMP) in 2020 and works to maintain and improve the health of the estuary (<https://www.peconicestuary.org/>).



Peconic Estuary Partnership Watershed Boundary

Source: Peconic Estuary Partnership

The PEP has identified threats to the ecosystem from the direct impacts of human activities such as dredging of navigational channels; hardening of shorelines with bulkheads and other erosion-control structures; and clearing of upland forests to build new roads, homes, and businesses. Specifically, ongoing changes in the environment that threaten the habitats of the estuary include:

- Development and land management activities that reduce, fragment, and degrade natural areas.
- Damming streams flowing into the estuary that prevent the movement of diadromous fish from salt to freshwater.
- Invasive species of plants and animals, that out-compete native species and change the ecology of the estuary.
- The combination of rising seas and lack of sediment, which threaten to drown tidal wetlands and mudflats, especially if they cannot migrate inland because of topography or man-made barriers.
- Nitrogen pollution, increased water temperature, and human disturbance contribute to the loss of eelgrass beds and decline of scallops and other shellfish.

The health and productivity of Shelter Island's shoreline and marine waters cannot be separated from that of the surrounding Peconic Bay. A series of harmful algae blooms in the 1980s and 1990s were part of the reason for creating the Peconic Estuary Partnership, and ongoing challenges to Shelter Island waters have already played out elsewhere. Perhaps most significant is the decline of eelgrass beds and tidal wetlands. Of more than 8,700 acres of eelgrass beds that thrived in 1930, fewer than 1,000 acres remain - much of it along the East side of

Shelter Island. In addition to the algae blooms, nutrient enrichment, and physical disturbance by boating and fishing practices, the major culprit may be warming water due to climate change.

Tidal wetlands have also declined in the estuary, losing about 10% of their extent between 1974 and 2005 - with the greatest losses in East Hampton and Shelter Island, according to the 2020 CCMP. This includes the drowning of some 25% of high marsh habitat during the same period. There are likely several forces at work, including sea level rise that seems to be outstripping the annual accumulation of sediments and organic matter, as well as the inability of many marshes to migrate inland due to shoreline hardening. What this means for Shelter Island is the loss of the extraordinary productivity of these ecosystems and the benefits they provide, including sediment retention, recycling of organic matter, and buffering of storm surge as well as irreplaceable feeding, breeding, and nursery habitats for invertebrates, fish, and birds. Lost along with these ecosystems are the traditions of fishing and scalloping that long supported Shelter Island's baymen and enhanced the lives of all Islanders.

Plants and Wildlife

The Island's diverse landscape supports a rich cross section of plant and animal communities, which are particularly vibrant in undisturbed areas such as the Mashomack Preserve, owned by the Nature Conservancy. The New York Natural Heritage Program has identified numerous rare species within four habitat types, as listed in the table below. The New York State Department of State (NYS DOS) has also designated three Significant Coastal Fish & Wildlife Habitats on the Island:

- Shell Beach, which has nesting sites for Least Tern and Piping Plover.
- Shelter Island Eastern Shallows, which has eelgrass beds of state importance and supports bay scallops as well as populations of Atlantic Ridley and Loggerhead turtles.
- Mashomack Preserve, an undeveloped marine coastal ecosystem that is rare in New York State.

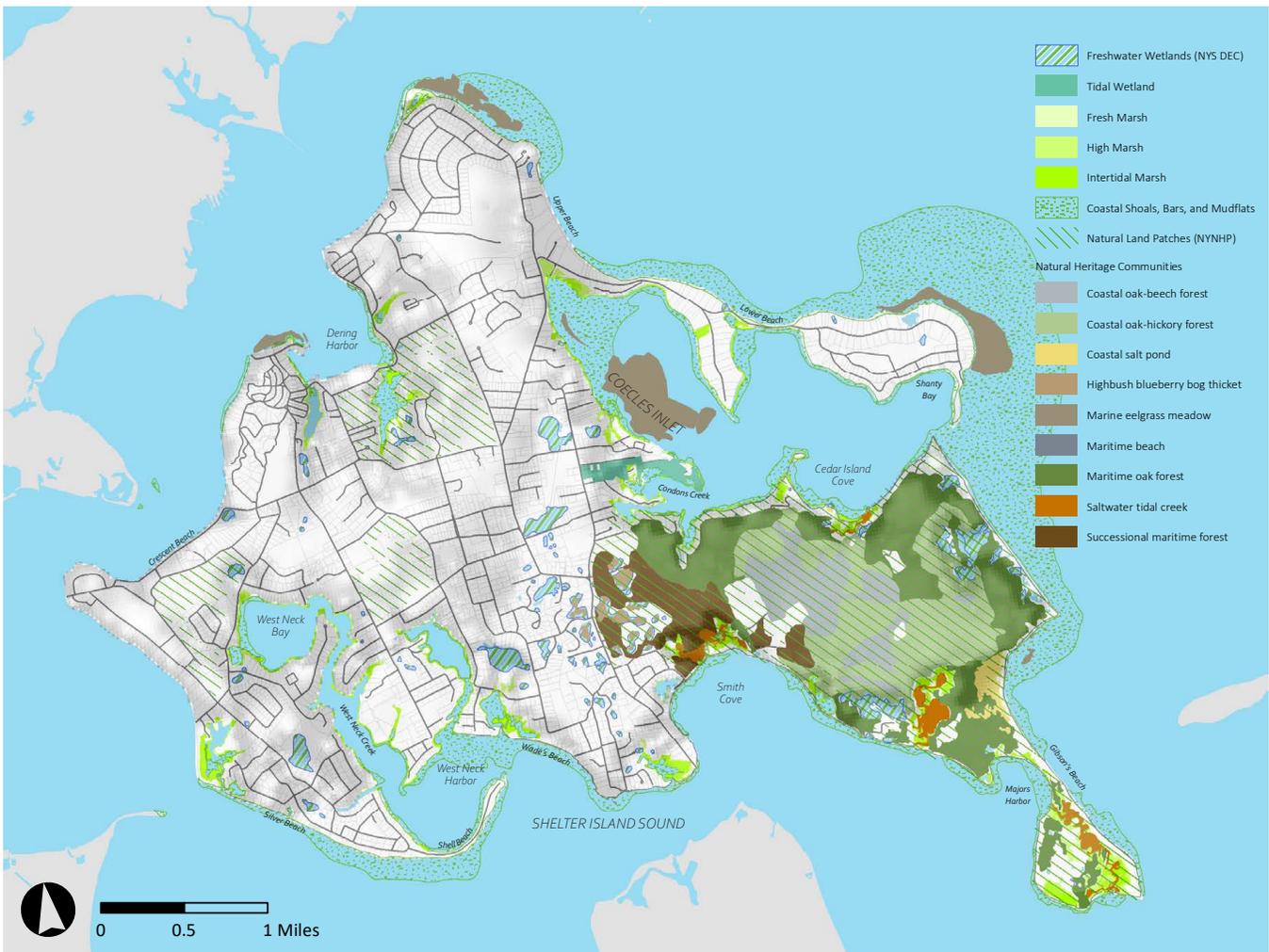


FIGURE 10: ECOLOGICAL RESOURCES

Source: MainStreetGIS, LLC., Suffolk County GIS, and NYNatural Heritage Program
 Map prepared by Dodson and Flinker, Inc. and Larissa Brown + Associates, LLC

Finally, the NY Natural Heritage Program has identified nine Significant Natural Communities, all associated with the Mashomack Preserve and nearby areas and each of which is significant due to its quality, age, or rarity within New York State:

- Coastal Oak-Beech and Oak-Hickory Forest, covering 665 acres on a moraine landscape on the interior of the peninsula, unique for its size.
- Coastal Salt Ponds, including Cedar Cove Pond and Plum Pond, surrounded by undisturbed forest.
- Highbush Blueberry Bog, formed in old kettle hole ponds and other lowland areas within the Preserve.
- Marine Eelgrass Meadow, a critically important habitat type and shrinking resource within the Peconic Estuary.
- Maritime Beach, including 11.4 miles of gravel and sand formed between mean high water and eroding dunes and bluffs.
- Maritime Post Oak Forest, creating special habitat along the edge of creeks and marshes.
- Saltwater Tidal Creeks, including Fan Creek, Miss Annie’s Creek, and Bass Creek, including low and high marsh habitats lined with oak forest.
- Successional Maritime Forest, encompassing areas around Smith Cover.

The Mashomack preserve is particularly important because these habitats are found together in one large area of undisturbed open space, but other large, forested areas elsewhere on the Island have been identified as potentially important by the State. These “Natural Land Patches” include Sylvester Manor and adjacent forested areas along Gardiner’s Creek, undeveloped land between North Menantic and Midway Road, and a large patch of forest on West Neck. In addition, the State has identified several rare or threatened species and one endangered species (white milkweed) on the Island.

In addition to Mashomack and other areas with statewide ecological significance, Shelter Island has hundreds of acres of undeveloped land that support a more ordinary population of plants and animals. Ranging from household lawns and gardens to small patches of forest surrounded by house lots, to golf courses and farmland, these everyday landscapes support a community of plants and animals that have adapted to human disturbance and thrive in the diverse suburban landscape. In addition to the ubiquitous deer, there are rabbits, squirrels, chipmunks, mice, raccoons, opossums, woodchucks, and predators such as foxes. Also benefiting from the diverse “edge landscape” common on the Island are the typical backyard and edge-dwelling birds and a large number of turkeys. Some other once-common species, such as bobwhite quail, spadefoot/fowlers toads, muskrat, otters, and mink have declined with the reduction of grasslands and marshes that support them.

Centuries of land use change have permanently altered Shelter Island’s ecology, capped by the suburban-style development that has transformed much of the Island since the 1950s. With relatively few predators and a decline in hunting, the common animal species that have prospered on the Island have become pests in some circumstances (at least from the affected homeowner’s perspective). Deer are probably the most problematic - damaging gardens, darting out in front of cars, and of course, serving as a vector for deer ticks and tick-borne diseases such as Lyme. As described in the Cultural Resources and Community Character chapter, the Town’s Deer & Tick Committee has implemented a range of strategies since its creation in 2005 to control the deer population. The most successful of these is hunting, which is overseen by the Shelter Island Police Department on Town-managed properties. Through three hunting seasons (recreational archery, recreational shotgun, and culling), the hunting programs resulted in

the deer herd being culled by about 550 animals in both 2018 and 2019. In 2023, 316 deer were reported from Oct. 1st to March 31st. 324 were reported over the same period in 2022.

Exotic and Invasive Plant Species

In addition to changing island fauna, land use change has brought with it a host of exotic and invasive plant species. A long list of perennials, grasses, and water plants threaten gardens, forest, and wetland habitats. Some of these were imported for use in landscaping or erosion control, while others have arrived by hurricane or accident. Collectively, they out-compete and sometimes literally choke out native species and the insects and birds that rely on them.

Volunteers have for many years worked to clear invasives on Town-owned properties and Mashomack Preserve, and Sylvester Manor staff pursue invasives control on their properties. The Town’s Conservation Advisory Committee (CAC) maintains a list of recommended and prohibited plant species. While the CAC has no direct authority, they provide advice and technical support to the Town Board and meet regularly to review site planning and development proposals that involve changes to the Islands fresh and salt-water wetlands, aquifers, woodlands, and other open lands.

EXISTING CONDITIONS: WATER QUALITY

DRINKING WATER

The information in this section is a summary from the 2020 *Ground and Surface Water Management Plan* prepared by the Town of Shelter Island Water Advisory Committee (which can be found in its entirety as an appendix to this Comprehensive Plan), as well as the *Suffolk County Comprehensive Water Resources Management Plan* (2015) and *Suffolk County Sub-watersheds Wastewater Management Plan* (SWP)(2020), the guiding documents for water resource management in Suffolk County. This document also includes recommendations from the *Shelter Island Watershed Management Plan*, which was developed in 2014.

The Island's groundwater resource consists of a single aquifer, isolated from groundwater aquifers on the mainland of Long Island's north and south forks. Unlike the hydrogeology of central and eastern Long Island where there are typically three relatively distinct aquifers – Upper Glacial, Magothy, and Lloyd - on Shelter Island only the Upper Glacial aquifer is potable. All of Shelter Island's potable water supply is sourced from wells that draw from the Upper Glacial aquifer; there is no use of surface water for water supply. The Magothy aquifer, often used as a source off-Island, is too saline for use on Shelter Island while the Lloyd aquifer that underlies the Magothy on Shelter Island is also saline. There is no potable water supplied to the Island through pipelines from either the north or south fork, though some water is trucked in to fill cisterns in compliance with Town laws.

The Upper Glacial aquifer water quality is challenged in certain areas of the Island, specifically by nitrate levels in the central portion and saltwater intrusion on the peninsulas and parts of the Ram Islands. The overall water balance for Shelter Island suggests an ample quantity of groundwater in most areas of the Island, with an annual withdrawal of 260 million gallons vs. an estimated recharge of 4 billion gallons. However, ongoing development and land use change have the potential to reduce recharge through, loss of natural kettle holes and other depressions that promote recharge, planting of plant varieties that require a lot of water, and use of well-drawn irrigation systems. In addition, a crucial issue is the contamination of the aquifer with nitrates and other pollutants, largely due to recharging from individual

wastewater systems, including antiquated cesspools. There are also areas that are impacted with MTBE and other man-made and natural elements in concentrations that render the aquifer in the affected areas unusable without treatment.

The Town's engineering department has been working to better understand the aquifer, identify pollution sources, and leverage Suffolk County, NY State, and federal programs that can aid in the effort. The Town has mapped onto GIS the Island's wells and septic systems. The department has applied for participation in the NYSDEC's Drinking Water Source Protection Program and continues to participate with the County in the U.S. Geological Survey (USGS) Solute Transport Modeling. In 2022, the USGS embarked on a pilot project for real-time data collection from the Shelter Island aquifer. The potential for the new USGS data to inform understanding of the aquifer is tremendous.

Public Water Supply

Four water supply systems on Shelter Island provide approximately 10% of the estimated total water demand. Their ownership, number of users and estimated percentage of total demand are described in the table below. In 2022, the Town signed a 40-year lease with the Suffolk County Water Authority (SCWA) to operate the West Neck Water Systems, which had been operated by a volunteer board of homeowners and maintained by a sole provider. The SCWA will not only operate the system but will also upgrade the infrastructure to comply with regulations and reduce water waste/leaking.

There are also three sites where multiple residences share one well; these sites pre-date zoning and are listed in the table below for informational purposes.

Private Wells

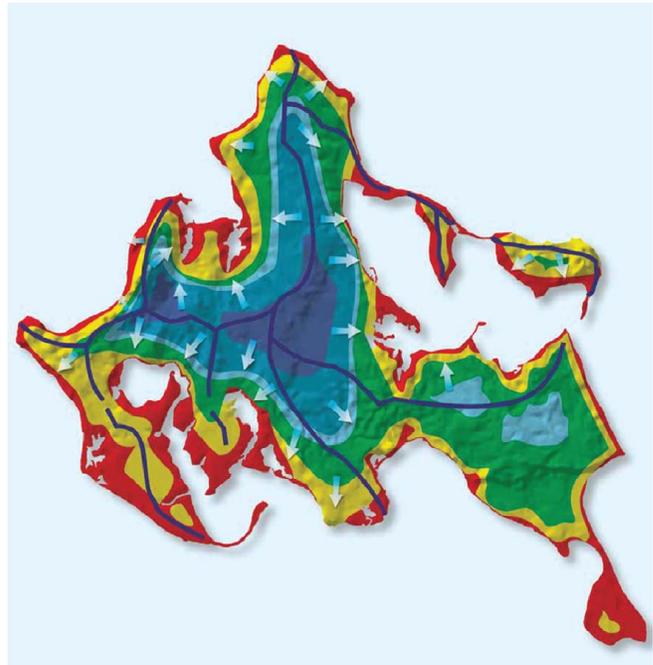
There are approximately 2,300 private wells on Shelter Island, estimated to meet the remaining 90% of the total water demand. These small-capacity well pumps are typically located on private property and draw supplies from the Upper Glacial aquifer. An increasing inability to source potable water on private property in some locations has led the Town, in special cases, to permit

a homeowner to move his/her well onto adjacent Town property. Many residents have found the need to install water treatment systems to attain acceptable water quality.

All of the wells on the Island together draw an estimated 260 million gallons each year, of which 95% is returned to the aquifer via onsite septic systems. Recharge through rain and snowfall is estimated to provide an additional 4.4 billion gallons to the aquifer; water not absorbed into the aquifer flows into surface water bodies or into surrounding salt-water bodies. While this suggests an abundance of fresh water, it is not distributed evenly to all areas of the Island. There are thinner aquifers in the peninsular areas like Montclair Colony and the Ram Islands. In addition, there is a seasonal pattern of aquifer drawdown during the summer months, accompanied by 90% of the recharge happening between October and March.

WATER QUALITY

Of equal concern to the quantity of water is the quality of water drawn from the aquifer. Testing has shown that water quality has deteriorated as a result of wastewater discharge from residential treatment systems, fertilizer, herbicide, fungicide and pesticide applications, and other contaminants from various sources. Nitrate levels have been slowly but steadily increasing in the Island's ground and surface waters and in some areas are exceeding the state and federal Maximum Contaminant Level (MCL) of 10 mg/L. Recent studies suggest that drinking water below 10 mg/L may not be as safe as widely perceived. The 10mg/L standard set by the EPA was originally designed to protect infants from methemoglobinemia, or "Blue Baby Syndrome", a condition that is caused by the conversion of hemoglobin to methemoglobin (which cannot carry oxygen) by consumption of nitrates in drinking water. The MCL was set to protect against this infant condition; however other health effects including cancer and adverse reproductive outcomes were not considered. While many studies have linked nitrates in drinking water above the MCL to cancer in humans, and others have been inconclusive, several studies have found a link between prolonged exposure to nitrates in drinking water below the MCL and cancer in adults. A 2010 study found a 260% increase in the risk of thyroid cancer in post-menopausal women consuming water with nitrates above 5mg/L vs under 5mg/L. This same study identified a 160% increase in the risk of bladder



Generalization of Aquifer Thickness

Source: Group for the East End

cancer when consuming water above 5mg/L for four years. A link to colorectal cancer was reported in a 2018 study. More on these studies and their references can be found in the Ground and Surface Water Management Plan.

According to the SWP, nearly all of the precipitation that recharges Shelter Island will discharge to a coastal water body within 50 years, with most of the groundwater baseflow discharging in less than 25 years. This indicates that a reduction in the nitrogen introduced in this area will result in reduced nitrogen loading to Shelter Island surface waters relatively quickly, compared with areas in western Suffolk County where it may take decades to realize the benefit. Thus, Shelter Island has the potential to stop and reverse the trend of increasing nitrogen in its aquifer relatively quickly if it makes a concerted effort to upgrade antiquated septic systems.

Recent groundwater monitoring has also detected volatile organic compounds (VOCs), PFAS, PFOS, pesticides, and pharmaceuticals in the Island's groundwater. Finally, saltwater intrusion is a significant threat, particularly in the peninsular areas on the south side of the Island. This will likely worsen with rising sea levels.

Water Quality Planning

Protecting the Island's water supply and ensuring continued clean water for every home and business has been a focus of planning on Shelter Island going back to the 1994 comprehensive plan, which recommended better management to reduce or eliminate contamination sources and to avoid downzoning in sensitive areas. In 2005, the Town commissioned a Water Supply Alternative Study, which took a comprehensive look at existing conditions, explored future growth scenarios, and estimated the costs and benefits of establishing an Island-wide water system. The study estimated a total cost of between \$25 million and \$38 million, and a capital cost per household of somewhere between \$8,500 and \$16,000 depending on the number of homes connected to the system.

In 2015, Suffolk County completed its Comprehensive Water Resources Management Plan, a 1,040-page document analyzing the water quality, quantity, availability, and challenges faced by all of the County. The Water Resources Management Plan set goals in four significant categories: groundwater resource management, drinking water supply, surface water resource management, and wastewater management. This Comprehensive Plan supports and carries forward these goals as they relate to Shelter Island.¹

The Suffolk County Sub-watersheds Wastewater Plan (SWP) (July 2020) was developed in response to the Comprehensive Water Resources Management Plan as part of the Reclaim Our Water initiative. Wastewater management options and recommendations explored in the SWP include connection of parcels to community sewers by expanding existing sewer districts or creating new sewer districts where possible, upgrading cesspools or conventional onsite sewage disposal systems to Innovative and Alternative On-Site Wastewater Treatment Systems (I/A OWTS), and requiring nitrogen reducing technology on all new construction countywide. For Shelter Island, the SWP noted that the minimal agriculture present suggests that groundwater nitrogen issues are due to onsite wastewater systems. Converting old septic systems to I/A OWTS was determined to be the most viable alternative for water quality improvement to groundwater and private wells on Shelter Island. The SWP also concluded that, because

Shelter Island lacked significant water infrastructure already, the majority of the Island, most likely, will remain on private wells. The County concluded that the success or failure of implementing many of these action items will be contingent upon securing necessary funding and cooperation from key stakeholders, and that holds true for the Town of Shelter Island as well. Any success in achieving cleaner drinking and surface waters will be the result of a cooperative effort of the Town, County, State and most importantly its local citizens and communities.

The 2020 One Island-One Water, Ground and Surface Water Management Plan took a fresh look at the subject and offered four goals or "key outcomes" to guide continued planning and implementation actions:

- All Shelter Island residents have ready access to drinking water that meets all applicable local, state, and federal standards.
- All wastewater effluent on Shelter Island discharged into the aquifer will be at a maximum of 19 mg/L in accordance with the new nitrogen-reducing septic system (I/A OWTS) standards set forth by Suffolk County.
- As Shelter Island's sole groundwater aquifer, the Upper Glacial Aquifers quality and quantity will continue to support the drinking water needs of residents without the need for "off-island" water.
- Surface waters surrounding Shelter Island will not be negatively impacted by human activity on Shelter Island.

SANITARY WASTEWATER DISPOSAL

The level of nitrates in the environment has become a focus for planning and legislation in Suffolk County because excess nitrates in drinking water have been linked to health issues and the excess in the surface waters surrounding Long Island is believed to have caused numerous fish and shellfish die-off's. Human sewage is the primary source of nitrogen pollution, and the disposal of untreated waste to the groundwater (which eventually flows into the surrounding surface waters) has been a focus of several studies and has led to County legislation and programs to reduce nitrate levels in the environment.

¹ <https://www.suffolkcountyny.gov/Departments/Health-Services/Environmental-Quality/Water-Resources/Comprehensive-Water-Resources-Management-Plan>

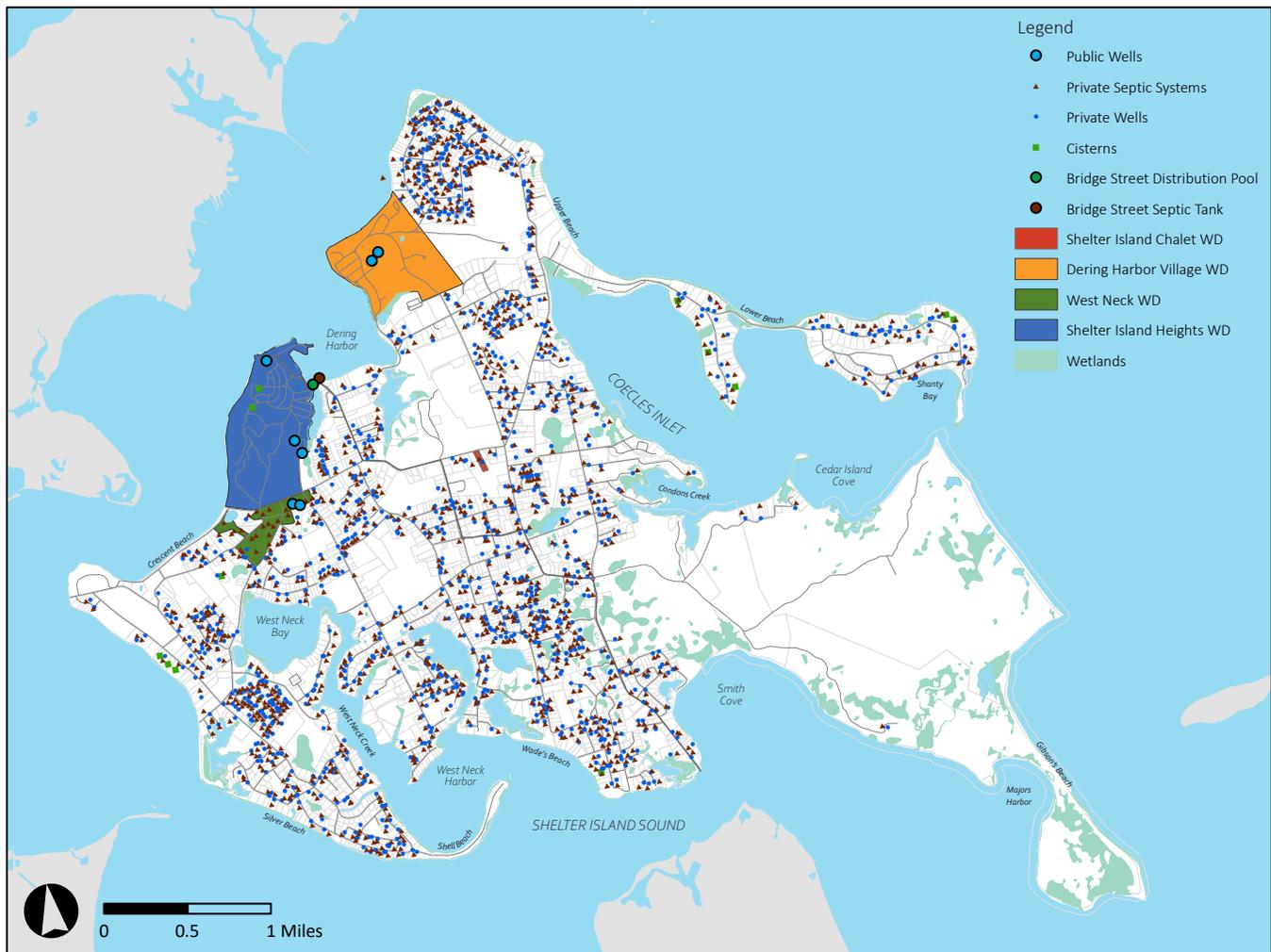


FIGURE 11: DRINKING WATER AND WASTE WATER INFRASTRUCTURE

Source: MainStreetGIS, LLC., Suffolk County GIS, and Microsoft
 Map prepared by Dodson and Flinker, Inc. and Larissa Brown + Associates, LLC

In October 2020, Suffolk County passed legislation that, as of July 2021, requires all new construction and some expansion/renovation projects to install Innovative/Alternative Onsite Wastewater Treatment System, or I/A OWTS. In 2017, the County launched a septic improvement program that created grants for property owners to replace aging sanitary systems with I/A systems. New York State also provided funds for this program and the Town has developed a rebate program using Water Quality Improvement Funds to incentivize homeowners to upgrade. Approximately 150 I/A OWTS have been installed on Shelter Island between 2018-2022. In addition to these residential I/A OWTS systems, a pilot commercial-scale non-proprietary gravel filter constructed wetland treatment system was installed

in 2017 at Sylvester Manor Educational Farm, serving resident staff and public restrooms; this system is the subject of ongoing study by the NYS Center for Clean Water Technology at SUNY Stony Brook, which is developing and installing innovative treatment systems across the County.

As is the case on much of Long Island, the majority of residential and commercial sanitary wastewater disposal is through the use of privately owned, on-site septic or disposal systems. There are approximately 2,400 on-site disposal systems on Shelter Island, including cesspools, septic systems (septic tank with leaching pools), or I/A OWTS. There are also a handful of composting systems on the Island. While cesspool-only systems were banned

in Suffolk County in 1973, many homes built before then likely have cesspools since the Suffolk County Department of Health Services did not require septic systems prior to that time. Given the age of the Shelter Island housing stock, there are likely many cesspool-only systems on the Island. The Town created a local I/A OWTS grant program that will provide local funding to supplement the County and State grants. In many cases, the combination of these grants will cover 100% of the cost of installing the new I/A OWTS.

have additional requirements depending on location and type. The system permits need to be renewed each year along with proof of water delivery. As of 2023, there is not an effective enforcement program in effect.

EXISTING AND POTENTIAL SEWER DISTRICTS

Shelter Island Heights is the only area of the Island that has a sewer system and sewage treatment plant. The plant uses a sequencing batch reactor system, originally installed in 1987 and upgraded in 2005 and 2015. It has a permitted flow rate of approximately 53,000 gallons per day of treated sanitary effluent. Upgrades to the treatment plant, which discharges its effluent in to Shelter Island Sound between Shelter Island and Greenport, are being studied – as is the potential for use of the treated effluent to be recycled to irrigate the local golf courses or other areas.

The Town's engineering department, using grant funding, has studied the possibility of consolidating wastewater treatment for municipal buildings in the Center. This led to a proposal in 2022 for a new wastewater treatment plant to be sited on Manwaring Road. The Shelter Island School did delay its plans to upgrade its old septic system independently. However, as of 2023, the school had pulled out of the project and installed I/A systems putting plans for the WWTP for the remaining municipal buildings on hold.

Three of the marinas on the Island use pump out systems to collect the black tank contents from resident and transient boaters and dispose of it on-site.

IRRIGATION

Because of the limited water supply on Shelter Island, the Town adopted a local law in 2015 that regulates irrigation systems (Town Code Chapter 82). All irrigation systems require an annual permit; pre-existing non-conforming irrigation systems can continue to withdraw from the aquifer, as can hand watering systems or one sprinkler. Most new irrigation systems require a cistern and may

WATER RESOURCES: GOALS AND RECOMMENDATIONS

Goal 7-1: Ensure that all Shelter Island residents have ready access to drinking water that meets all applicable local, state and federal standards. All groundwater shall follow the stricter of New York State Ambient Groundwater standards and guidance values or Maximum Contaminant Level Goals (MCLGs) to the greatest extent feasible and practicable. Water quality that is better than the existing standards should be preserved, to the greatest extent feasible and practicable.

Continue to implement the Shelter Island Ground and Surface Water Management Plan.

The Ground and Surface Water Management Plan (2020) is intended to be the Island's strategic plan for ground and surface water management, and it is the primary resource for such issues. In addition, the 2014 Watershed Management Plan is officially part of the Comprehensive Plan and has been incorporated as an appendix to the main document.

The Ground and Surface Water Management Plan presents the current status of the Island's aquifer, the short- and long-term threats to it as a drinking water source for the Island, and its impacts on surface waters within and adjacent to the Island. A vision for the future is embodied in four strategic, "Key Outcomes" that describe desired future states, with a series of recommended implementation actions to be taken over period of 0-5 years, 6-10 years, and 11 years and beyond. While several of the recommendations can and should be acted on immediately, others need to be further developed through a robust stakeholder engagement process.

An ongoing planning process is envisioned, including an annual review of this Plan and the Key Outcomes and recommendations, and the creation of an Annual Plan describing specific actions needed in the given year to move toward the Key Outcomes. There are many external entities working on groundwater and

surface water challenges and opportunities, and their work should be integrated into future revisions of this Plan. The Annual Plan will assist the Town Board in the prioritizing, budgeting, and implementation processes. The Town should also continue to closely monitor the Suffolk County Sub-Watersheds Wastewater Plan implementation, particularly to help identify reliable funding source(s) for implementation of projects on the Island.

Goal 7-2: Plan for and develop wastewater and water supply infrastructure to safeguard public health, protect the environment, and promote sustainable development.

Consider establishing an Island-Wide Wastewater Management District, or local community districts (cluster systems).

A potential wastewater management district could have dual roles. First, it would assist in undertaking the extension of sewerage into now unserved areas, such as Bridge Street. The district would help to plan necessary infrastructure which would direct effluent from multiple properties to manage and treat wastewater in a central facility. The treatment process involves removing pollutants, solids, and harmful substances from the wastewater to make it safe for discharge or reuse for non-potable purposes like irrigation.

A wastewater management district would also assist homeowners and businesses in unsewered portions of the Island in managing their on-site disposal systems including installation of I/A OWTS in addition to maintenance education of traditional septic systems.

Continue investigating methods to treat effluents from municipal buildings in Town Center.

The Town is studying methods to improve wastewater treatment for several municipal buildings in the Town Center, all of which rely on antiquated septic systems that contribute to high nitrate levels in drinking water. Possibilities could include the following: aggregate I/A systems on 2 or more municipal properties, a small treatment plant for the most or all of the buildings located in the center, or the creation of a sewage treatment district to treat more than the municipal buildings. Water quality data should drive these explorations.

Partner with the Shelter Island Heights Property Owners Corporation to upgrade the existing sewer plant in the Heights, provide service to other areas, and explore alternative methods of disposing of the treated effluent.

There is one sewage treatment plant on the Island, which serves the Heights. The effluent from the Heights plant meets its State Pollution Discharge Elimination System (SPDES) permit levels and is being discharged to Shelter Island Sound. The Heights Property Owners Corporation could consider working with the Town to upgrade the existing aging sewage treatment plant, which would make it eligible for municipal grant funding.

There may be other opportunities for the Town to partner with the Heights plant to enable expansion of services to other residences and structures. One opportunity may be to connect Bridge Street businesses to the Heights WWTP. This would eliminate several current non-conforming septic systems, all of which contribute to surface water contamination of Chase Creek and Dering Harbor. This partnership would be beneficial because 1) it would eliminate the surface water contamination from old septic systems currently leaching into Chase Creek and Dering Harbor; 2) may allow for the installation of apartments in existing second and third stories; 3) would require an upgrade to the Heights wastewater treatment plant that would bring it up to a tertiary level of treatment and possibly include recharge, thus eliminating the need to pump the treated wastewater effluent into the Peconic Bay; and 4) would create eligibility for grants and other funds that are not accessible to the existing Shelter Island Heights Property Owners Corporation.

Goal 7-3: Plan for and develop water supply to ensure residents have ready access to drinking water that meets all applicable local state and federal standards.

Create a phased Master Plan for public water utility service on Shelter Island.

As saltwater intrusion and rising Nitrate levels become more of a significant and consistent problem, more residents are reaching out to the Town and requesting a solution and to be provided with potable water. With this in mind, developing a Master Plan for public water utility service involves a comprehensive and systematic approach to ensure that all aspects of water supply are considered and integrated into a long-term strategy. The process would include an assessment of the current water supply, community engagement, water demand projections, risk assessment, financial planning, and phasing. It would also catalog potential land for acquisition that satisfies the municipal sanitary radius and other water quality and yield requirements for municipal wells.

The Master Plan should establish manageable phases based on priority, funding availability, and urgency. In the short term, the plan would focus on areas that are currently or anticipated to be challenged – meaning that they are unable to reliably source potable water from residential wells. The process should begin with discussions with public water suppliers to understand the engineering and financial aspects of this undertaking. It should also include a study of the aquifer quality (Nitrates, Chlorides, PFOA/PFOS) in the areas requesting water service to identify and prioritize the need for remediation of contaminants and to determine where water districts should be prioritized Island-wide.

The plan would also develop a financial model and identify funding sources for drinking water supply improvements. This could include the establishment of a Water Quality District or an Island-Wide Water Management District. In the long term, the Master Plan could consider integrating the Heights, Bridge Street Water Company, West Neck Water, and Dering Harbor water systems, as appropriate.

Goal 7-4: Educate and Assist Property Owners on how to prevent contamination of private water wells and safeguard their drinking water quality.

Educate the public on the water quality in their area and encourage testing of private wells.

There are many things the Town can do to raise public awareness about water quality and the importance of well water testing.

- Create brochures, flyers, and posters that provide information about well water quality, potential contaminants, and the benefits of regular testing.

The materials can be distributed at local stores, Town offices, at community meetings, and via social media.

- Organize community workshops or town hall meetings to discuss water quality issues and the importance of testing private wells. Invite local experts, health officials, and environmental specialists to present information and answer questions.
- Provide on-site testing or sample collection and offer information about how to interpret test results.

- Develop a dedicated website or web page that serves as a central hub for water quality information. Include resources, links to testing laboratories, and guidelines for interpreting test results.

Develop an incentive program for residents to test their well water and share the data with the Town for the purpose of establishing groundwater quality mapping.

The Town should develop a program to encourage more people to participate in well water testing. One opportunity would be to collaborate with local stores to display educational materials. The Town could offer a rebate if homeowners share water quality data with the Town or on an online platform. Results could be shared with the public through regular updates, reports, and interactive maps to increase transparency.

Continue the grant program for I/A System installation.

Suffolk County has assertively pushed for private property owners to transition to the use of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS or I/A). To make these systems more affordable, the county together with the state has provided both a grant program (up to \$20,000) and a low-interest financing program as part of the Reclaim Our Water initiative. The Town’s grant can add up to an additional \$21,000.

Shelter Island’s septic grant process is through the Water Quality Improvement Advisory Board to support the voluntary installation of I/A systems. These grants are funded through the Community Preservation Fund Transfer Tax. The expansion of the use of these funds to include water quality initiatives was approved by voters in 2016.

Develop wellhead protection zoning for the area of recharge for the wells of each of the public water systems.

The Suffolk County Department of Health (SCDOH) requires public supply wells to have a 200 foot sanitary radius of property owned by the water supplier. Due to the high density of housing in the areas with public supply wells (Dering Harbor, West Neck Water and SI Heights), it has become increasingly more difficult to maintain that minimum sanitary radius. Properties that have the ability to maintain the minimum sanitary radius should be cataloged and, if not, given priority for grant funding to upgrade their sanitary system to a nitrogen reducing system or given priority status for purchase if undeveloped. In addition, an inventory of existing well sites and pumping capacity should be maintained (also on GIS) to determine the adequacy of current supply and forecast future needs.

Pursue grant and other funding opportunities for water quality improvement projects.

In order support the best practice of stopping pollution at its source, in order to render remediation more effective, the Town must continue to maximally encumber 20% of the 2% Community Preservation Fund and roll that fund over year to year via resolution, exclusively for the use of water quality improvement projects, wastewater treatment improvement projects, aquatic habitat restoration, pollution prevention, storm water collecting systems and vessel pump out stations and/or boats, as defined in the Peconic Bay Region Community Preservation Funds Town Chapter 62, article 4. The Town should also continue to identify and pursue grant opportunities from County, State and Federal water quality improvement and habitat restoration initiatives.

Goal 7-5: Strengthen Town regulations to protect groundwater and prevent contamination.

Implement source water protection programs that identify vulnerable areas around wells and other groundwater sources.

This could include the designation of “Water Protection Zones” (WPZs) where estimated effluent travel to surface water (fresh or salt) is less than 2 years (Based on 1 ft/day movement) and areas that are currently experiencing groundwater at or above 7mg/L of nitrates. The WPZs would include standards to minimize contamination risks in these areas, including land use restrictions, buffer zones, and pollutant reduction measures. More information on WPZs can be found in the Watershed Management Plan.

Revisit the Town’s I/A OWTS code.

More clarification is needed for the conditions where installation of an I/A system is required. The Town should consider a regulation that requires upgrading cesspool-only waste systems to add an I/A system upon property transfer (unless determined not to be feasible by a Professional Engineer). The Town could consider a long-term plan to upgrade all sanitary systems over the next 10 years. Priority areas would include those in WPZs, which could have a shorter “Voluntary Compliance Period” such as 3 years (depending on the permitting and grant application process duration). This is discussed further in Appendix C of the Ground and Surface Water Management Plan.

Address issues and risks of underground fuel oil storage

The primary concern for underground oil tanks is the potential for leaks or spills, which can lead to environmental contamination, health hazards, and costly cleanup and remediation efforts. This issue is more common in aging or improperly maintained tanks. In some cases, residential properties may have underground fuel oil storage tanks that were abandoned

or forgotten over time. These tanks may deteriorate and leak without anyone being aware of the issue, exacerbating the potential for contamination.

It is recommended that the Town develop a program which encourages the replacement of underground tanks with above-ground systems, which are easier to inspect and maintain. The Town already requires abandonment prior to the issuance of a re-construction permit; additional requirement to abandon on property transfer should be instituted. Further, a program to encourage voluntary compliance should be considered such as , a rebate program and low/no-interest financing options for the replacement of underground fuel oil storage tanks

Goal 7-6: Continue to monitor water table levels and implement water use restrictions as indicated to support the drinking water needs of the Island residents without the need for “off island” water.

Implement water use restrictions as indicated in the drought monitoring criteria established by the Water Advisory Committee (WAC).

The Drought Indicator Criteria consists of three components, and/or requirements resulting from a New York State proclamation of Drought Emergency or Disaster.

- Criteria #1. Us Seasonal Drought Outlook
- Criteria #2. Drought Severity Monitor Report
- Criteria #3. Shelter Island Well Height Levels For Criteria 3, 'Normal' drought measurements rate the current water quantity versus the total capacity of a system. For example, the total capacity of a reservoir versus the amount measured within it. For Shelter Island groundwater quantity, because of the uncertain and varying saltwater diffusion zone, the “capacity” of potable water in the aquifer is difficult, perhaps impossible, to determine. For this reason, the monthly readings for monitored wells are compared to the seasonal historic well levels to provide a relative guidance on available water.
- Consideration should be given to declaring the months of June July and August “critical” regardless of drought condition due to the dramatic increase in summertime well usage.

Evaluate policies which address use of irrigation.

Over-extraction of well water for irrigation can lead to a decline in the water table, affecting the well’s long-term sustainability. In coastal areas it can lead to saltwater intrusion rendering wells unpotable. It can also lead to aquifer depletion, reducing the overall water supply and

potentially impacting nearby wells and surface water sources. Some potential policies to address include the following:

- Revise the irrigation law to prohibit well drawn irrigation, especially in the near shore overlay, including grandfathered systems.
- Develop policy or code to determine the appropriate regulations for irrigated tennis courts
- Figure out enforcement- for example 1-year temporary permits for new construction should require proof/ inspection when removed at the expiration of the permit

Revise the irrigation law to promote cistern use and discourage trucked in water for irrigation.

The town should update the irrigation law to eliminate well drawn irrigation and promote the collection and capture of roof runoff into cisterns for the purpose of irrigation. Discouraging trucked-in water for irrigation can be challenging but is essential for sustainable water management. Trucking in water is an expensive and unsustainable practice, which also puts a strain on neighboring towns’ water supplies, our roadway infrastructure all while adding to ferry lines.

Develop a groundwater model

Groundwater models help in understanding the complex behavior of aquifers, such as how water flows, interactions with surface water bodies, and responses to changes in pumping rates. A model can provide insight into the availability and distribution of groundwater resources. This aids in planning for future water demands and potential conflicts. This information is valuable for optimizing well usage, predicting sustainable yield, and

avoiding over-extraction. With a groundwater model, it becomes possible to estimate the long-term sustainable yield of a well or a group of wells without depleting the aquifer beyond its capacity. This data can also be used to help identify high-volume water users as discussed below.

The Water Advisory Committee monitors 12 USGS wells which are slowly being converted to provide real time well level data. When this project is fully operational, a groundwater model will be feasible. The WAC should continue this monitoring as well as the South Ferry Monitoring Station and other active water quality monitoring efforts. Expand this as necessary to build the sophistication of our data so that our picture of the entire Shelter Island water resource cycle is better understood

Identify high-volume water users to target future education, funding, and support.

Monitoring water usage in private wells requires a combination of manual observations, data logging, and periodic measurements. Since private wells are not typically connected to a centralized monitoring system like public water supplies, homeowners must take an active role in tracking their water usage. When

technological advancement allows, the Town should require every well to be monitored and to share that data with the Town engineer.

Improve education about water conservation and landscaping best practices.

Improving education about landscaping best practices to limit water and fertilizer use is crucial for promoting water conservation, reducing pollution, and creating more sustainable landscapes. Printed and online materials help to educate the public about drought tolerant and native plants. These materials could be provided on the Town’s website and in hard copy at Town Hall and the Building Department.

Another opportunity for a pilot project would be to convert one of the Town-owned properties to an environmental education center, showing best environmental practices for landscaping, yard care and a section promoting plantings for pollinators. This project could be done in coordination with Community Preservation Funds and local landscape and lawn care businesses.

Goal 7-7: Protect surface waters surrounding Shelter Island from being harmed by human activity and stormwater runoff.

Reduce the discharge of volatile organic compounds and other contaminants to groundwater through education and Town Code modification.

Town regulations play a crucial role in addressing stormwater runoff and implementing effective stormwater management practices. Stormwater runoff occurs when rainwater flows over impervious surfaces like roads, parking lots, and rooftops, picking up pollutants and carrying them to nearby water bodies, leading to water quality degradation and flooding. Town codes can

be designed or amended to mitigate these impacts and promote more sustainable stormwater management. Here are some provisions to consider addressing:

- Include Suffolk County Local Law No. 41-2007 “A Local Law to reduce Nitrogen pollution by Reducing Use of Fertilizer in Suffolk County” in the Town Code.
- Explore the fertilizer regulations of other coastal and island communities and adopt the most appropriate policy and practice for Shelter Island.
- Provide Town oversight/enforcement of the County ban on the application of fertilizer between November 1st and April 1st

- Require businesses selling fertilizer to post fertilizer areas with the notice required by the County.
- Explore the fertilizer, herbicide, pesticide, and fungicide regulations of other coastal and island communities, see how they handle the issue, and adopt the most appropriate policy and practice for Shelter Island.
- Educate on and encourage the proper use and disposal of lawn and other household chemicals.
- Revisit the requirement of permeable surface driveways in the nearshore overlay because people are more likely to use pesticide and weed killer on them. Consider allowing hard surface driveways with mandatory water capture and recharge via trench drains and drywells, redirection into rain gardens and swales, or other forms of water collection and recharge.
- Evaluate and recommend Best Management Practices for proactive reduction of VOCs capable of entering groundwater and surface waters. The most effective method for preventing VOC contamination is to prevent their use or disposal in locations where they have the ability to enter groundwater or surface waters. The reduction of use of such products is voluntary, albeit necessary, to reduce the introduction of these compounds in groundwater. In surface waters, the reduction of the introduction of the compounds could result in a change of practices at marinas and waterfront uses.
- Evaluate and recommend Best Management Practices for the proactive reduction of pharmaceuticals and personal care products in groundwater and surface waters.

Provide upland storm water catchment detention and recharge infrastructure to better control stormwater runoff and to reduce contamination of ground and surface waters.

Stormwater catchment with roadside rain gardens is a sustainable stormwater management practice that involves the use of rain gardens or bioswales along roadsides to capture and treat stormwater runoff. These features are designed to mimic natural processes, allowing rainwater to infiltrate the soil, be taken up by plants, and undergo biological and physical filtration. This approach helps reduce the volume and pollutant load of stormwater runoff, thereby minimizing the negative impacts on water bodies and mitigating flooding and erosion.

The Town can also encourage coastal residents to create vegetative buffer zones on their properties to lessen runoff into the bays. This could include educational outreach, technical assistance, creating buffer planting kits and zoning regulations such as “buffer zones” with minimum planting requirements.

Continue to monitor the health of surface waters.

The Town should develop/continue monitoring programs (or participate in existing programs) for surface waters contained within and surrounding Shelter Island in conjunction with The Nature Conservancy, the Peconic Estuary Partnership, Peconic Baykeeper/Blue Water Task Force and Cornell Cooperative Extension. With the purpose of developing a database of local surface water quality information that can be used to trend pollutant levels, assist in the groundwater modeling and management efforts, and aid in shellfish management and aquaculture activities. The monitoring programs should include data from the commercial baymen about the quality and quantity of their catch to help monitor health of our waterways, shellfish, and marine life.

NATURAL RESOURCES: GOALS AND RECOMMENDATIONS

Goal 7-8: Identify, protect and enhance the quality of freshwater and marine habitats.

Restore tidal and freshwater wetlands habitats to foster their continued existence as natural systems.

Restoring tidal and freshwater habitats is a collaborative effort that requires patience, dedication, and a long-term commitment to preserving the natural environment for future generations. Some general strategies include the following:

- Conduct a Habitat Assessment: Begin by assessing the current state of the tidal and freshwater habitats on the Island. Identify areas that have been degraded or lost due to human activities, erosion, or other factors. Understand the ecological needs of the native flora and fauna that once thrived in these habitats.
- Develop a Restoration Plan: Work with environmental experts, conservation organizations, and community stakeholders to develop a comprehensive restoration plan. This plan should include specific goals, target habitats, strategies for restoration, and a timeline for implementation.
- Remove Invasive Species: Prioritize the removal of invasive species to create space for native plant regeneration.
- Reforestation and Revegetation: Planting native tree species along riverbanks and wetlands can stabilize the soil, improve water quality, and create essential habitats for wildlife.
- Wetland Restoration: Reestablishing or enhancing wetlands can help improve water quality, provide breeding grounds for aquatic species, and mitigate the impacts of flooding.
- Protecting Coastal Areas: Coastal habitats are vital for protecting the shoreline from erosion and storm surges.

- Educate and Engage the Community: Raising awareness about the importance of these habitats and involving the local community in restoration efforts can lead to better long-term success.

Protect and restore Significant Coastal Fish and Wildlife Habitats and NYSDEC Critical Environmental Areas.

Protecting fish and wildlife habitats is essential for maintaining biodiversity, ecosystem health, and the overall balance of nature. It is essential that Shelter Island promote sustainable use of these marine habitats and resources to ensure they are here for future generations. Some strategies to consider include:

- Sustainable Fishing and Hunting Practices: Promote sustainable fishing and hunting practices that prioritize conservation and ecosystem health.
- Marine Conservation: Protect marine habitats by combating pollution, controlling coastal development, and establishing marine protected areas. Encourage responsible fishing practices and reduce bycatch to safeguard marine ecosystems.
- Address Pollution: Take measures to reduce pollution, including runoff from agricultural and urban areas, industrial waste, and plastic debris in waterways.

Goal 7-9: Protect Upland Habitats and Trees

Promote habitat preservation and restoration so that Islanders and visitors can enjoy a healthy ecosystem as once existed on the Island.

This includes various strategies to retain and add indigenous plants to maintain and restore values of upland ecological communities. Indigenous plants are a vital component of local ecosystems and contribute to biodiversity. Preserving these plants helps maintain ecological balance and supports the survival of diverse flora and fauna. They play a crucial role in maintaining healthy ecosystems by preventing erosion, filtering water, and mitigating the impacts of climate change.

- Consider incorporating wildlife corridors by setting fencing regulations to include a minimum setback from the property line.

Adopt a Tree Preservation Local Law for the purposes of protecting woodlands and individual historic, significant, and scenic trees important to the community.

The overall goal of a tree preservation local law is to strike a balance between development needs and environmental conservation, ensuring that community can evolve while safeguarding its natural resources and maintaining its unique character. The specific provisions would need to be determined based on an assessment of community priorities and environmental considerations; however, it could include the following topics:

- **Tree Identification and Protection:** The law may specify which species and sizes of trees are protected. This could include mature trees, rare or endangered species, and trees with cultural or historical significance.
- **Tree Removal Permit:** Would require property owners or developers to obtain a permit before removing designated trees, and trees exceeding a certain size, ensuring that proper assessment and consideration of alternatives are undertaken.

- **Tree Replacement:** In some cases, the law may require replanting or replacement of trees that are removed. This helps maintain the overall tree canopy and ecosystem functions within the community.
- **Buffer Zones:** Tree preservation laws may establish buffer zones around ecologically sensitive areas, water bodies, or habitats, where tree removal is restricted to protect the natural environment.
- **Tree Care and Maintenance:** The law may outline guidelines for proper tree care and maintenance to ensure the health and longevity of protected trees.
- **Penalties and Enforcement:** To ensure compliance, the law may define penalties for violations, such as illegal tree removal or failure to obtain required permits.

Engage NY DEC and local resources to explore establishing a controlled burning program.

Controlled burning is used as a tool for ecological management and restoration of habitats, particularly in certain areas with fire-adapted habitats. These controlled burns are carefully planned and conducted under specific conditions to mimic the natural role of fire in maintaining certain ecosystems. Controlled burning programs often involve collaboration between state agencies, land management organizations, and local fire departments to ensure effective planning and execution. The public is informed about the controlled burning programs in advance to ensure public safety and to raise awareness about the ecological importance of controlled burns.

Unfortunately, there are many hurdles to overcome when pursuing controlled burning programs. There are stringent requirements set by NYSDEC, and current methods have been costly and largely ineffective to date.

Goal 7-10: Monitor and Control Nuisance Species

Manage Whitetail Deer (*Odocoileus virginianus*) populations and work with wildlife management agencies to educate the public on the advantages and disadvantages of deer populations.

Managing conditions for rodent populations to survive and grow and deer management are critical to managing the tick population. Like many locations in the US, Shelter Island has an overabundant deer population that causes ecological damage from over browsing, public health and safety impacts, and other negative impacts. The Shelter Island Deer and Tick Committee has pursued a three-pronged strategy to control tick borne disease: deer management, reduction of ticks through application of chemical acaricide at “4-Poster” deer feeding stations (program currently suspended pending state regulatory changes), and public education.

The Town’s deer hunting program is managed by the Police Department and extends from October 1 through March 31. In addition, the Nature Conservancy and Sylvester Manor have deer management plans and coordinate with the town programs.

Work with organizations and property owners to help assess and control ticks and prevent tick-borne diseases.

Diseases caused by tick-borne pathogens are widespread on Shelter Island and nearby communities and they pose a major health concern. Conducting tick-borne disease monitoring is essential to protect public health, promote early detection and treatment, implement targeted prevention strategies, understand environmental factors, raise community awareness, and support research efforts.

The Town should continue to work with the Deer and Tick Committee to implement identified strategies, which include methods for monitoring, targeted prevention strategies, and improving community awareness and education. The Town should also continue to evaluate environmental and ecological considerations and

collaborate with other researchers who are studying disease patterns, effectiveness of interventions, and emerging tick-borne diseases or strains.

Develop an education program prohibiting the introduction, throwing, dumping, depositing, or placing invasive species on/in Town land and waters.

- Encourage Landscaping Best Management Practices to eliminate the use of invasive species.
- Continue to educate the public about the benefits of using native species in landscaping.
- Work with Cornell Cooperative Extension of Suffolk County and NYSDEC to provide information on how to control invasive species including Integrated Pest Management (IPM).
- Support the Cleaner Greener New York Fighting Invasive Species initiative.
- Educate the public and tree service companies about preventing the spread of diseases that affect native trees.
- Target the removal of invasive species from Town-owned lands to facilitate the reestablishment of indigenous community types when a known population of endangered, threatened, species of special concern, locally rare or unique native species, or ecological community is directly jeopardized. This is critical because some of the more widespread invasives serve as ideal tick habitats.

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