

Treasure Island Stewardship Plan 2023-2033



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Introduction

Treasure Island is truly a treasure for the community. Unfortunately, in recent years it had suffered from increasing costs, declining revenue and some benign neglect. Various plans were put forth including the possible sale or development of the property. Fortunately, the citizens of Thetford stepped forward to express interest in revitalizing the park and as a result the Treasure Island Exploratory Committee was formed. Just as the name suggests, the Committee was tasked with exploring various options to restore the park to a condition that would secure Treasure Island as a vibrant resource for the community.

Natural areas around Vermont's lakes are increasingly rare. Lakefront property is prime real estate for new construction or conversion from small seasonal camps to large year-round dwellings. This goal of this plan is to frame the work that needs to be done to restore and protect the natural areas of Treasure Island. A healthy riparian forest and wetlands build soil health, improve air and water quality, retain stormwater, and help mitigate greenhouse gas emissions. Cool clear water is ideal for swimming, boating and fishing. Protecting and enhancing the property will require a dedicated effort but the rewards will be long-lasting.

This Stewardship Plan is intended to cover a ten-year planning horizon. The plan provides both a framework for moving forward and a metric to track progress. An annual review to check progress and ensure ongoing success will help to keep efforts focused on the long-term goals for Treasure Island.

The Stewardship Plan is divided into three main sections. The first section provides a general overview and brief history of the property. Section II explains how the property is divided into Management Units and provides the social and ecological inventory for sections of the property. Section II also briefly describes the other planning documents and State laws that may influence how this property is managed. The last section is the "boots on the ground" action steps that can be implemented to protect and enhance Treasure Island and Lake Fairlee.

1.0 Property Context

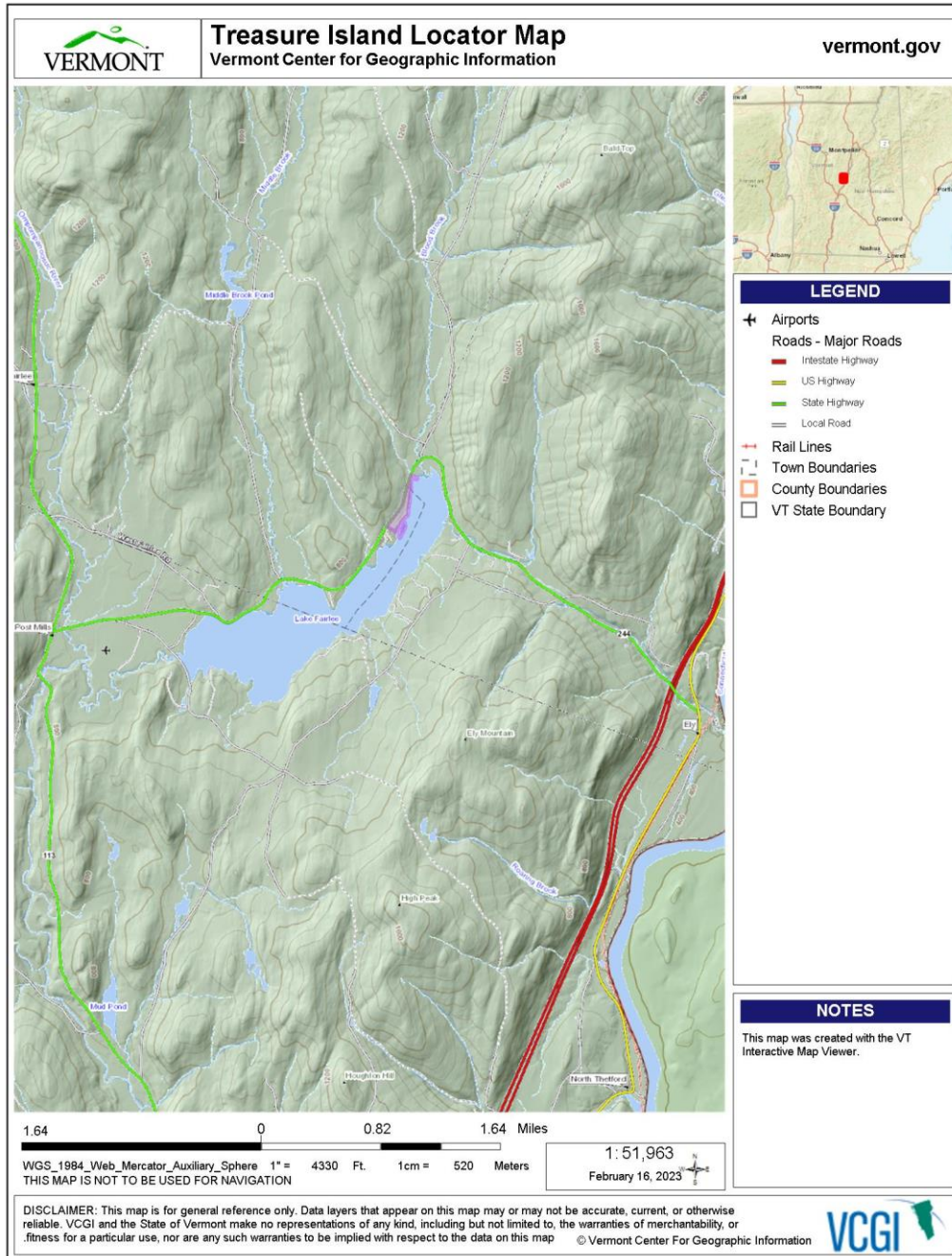
1.1 Site Description

Treasure Island is an 11.48-acre parcel owned by the Town of Thetford. Although the Town of Thetford owns the property, 10.6 acres are situated in the Town of West Fairlee and a small abutting 0.88-acre portion is located in Fairlee. Treasure Island is a long skinny parcel that sits on the northwest shore of Lake Fairlee, east of State Route 244. The physical address is 1218 Rt.244, West Fairlee, VT.

The larger surrounding area is a mix of summer camps, seasonal and year-round residences and large blocks of forested land further back from the shoreline. The entire north end of the lake is relatively undeveloped compared to other sections of the shoreline. Along the west and north sides of the lake Rt. 244 has a significant impact. The road is quite close to the shoreline which may serve as a barrier to wildlife by severing the connectivity of the forested blocks to the shoreline.

Lake Fairlee is part of the Middle Brook Watershed which covers 13,351 acres in Orange County, Vermont. Lake Fairlee is created by a dam at the southern end. The outflow enters the Ompompanoosuc River and ultimately flows into the Connecticut River and Long Island Sound.

Figure 1 Treasure Island Locator Map



1.2 Site History

In 2015 the Thetford Selectboard appointed a committee to study the town beach and make

recommendations to improve the facility and finances. As the newly formed *Treasure Island Advisory Committee* began working, they discovered that no single source of information existed for Treasure Island. In 2016, Wanda Vaughan compiled a document, "*Thetford Vermont's Treasure Island, A History.*" The following is a brief summary of this fascinating document.

The Abnaki had many names for what is now Lake Fairlee including *tolbabawk* meaning "snapping turtle pond" and *quinibeck* meaning "a long pond". In 1797, the Vermont Legislature passed an act enabling the construction of a dam at the southwest corner of Lake Fairlee to supply local mills. Eventually the mills closed, and by the 1940s there were at least *ten* summer camps around the lake catering to both children and adults. During that period 35-40 private summer homes were also constructed on the shores of Lake Fairlee.

Camp Beenadeewin, Camp for Girls opened in 1914 on the site that is now Treasure Island. Camp Beenadeewin advertised horseback riding, boating, tennis, and waterskiing. The facilities included 27 sleeping cabins "along the delightfully shaded shore of the lake," the director's cabin, two recreational outbuildings, nature buildings, craft shop, infirmary, office, store, tutoring cabin, as well as various service buildings. All buildings were equipped with electric lights and "a modern system of sanitation and sewage disposal...throughout the camp." When the property was described to the selectboard for consideration of purchase in 1972, the inventory included two houses, a number of camps, horse shed, bathhouse and three tennis courts. The 1973 Recreation Board reported the removal of more than 50 wooden structures and debris! The same report describes the construction of a beach and renovation of the existing tennis courts.

The 1973 report goes on to explain that the property was open for 80 days, with local attendance of 4000. Swimming lessons were provided for 158 residence and a treasure hunt and carnival were hosted on the property. Over the years thousands of people have learned to swim, play tennis and enjoy gatherings with friends and family at Treasure Island. A summer day camp took place for many years after the Town purchased the property. The day camp was eventually closed but the Town continues to offer swim lessons and picnicking.

1.3 Plan Purpose

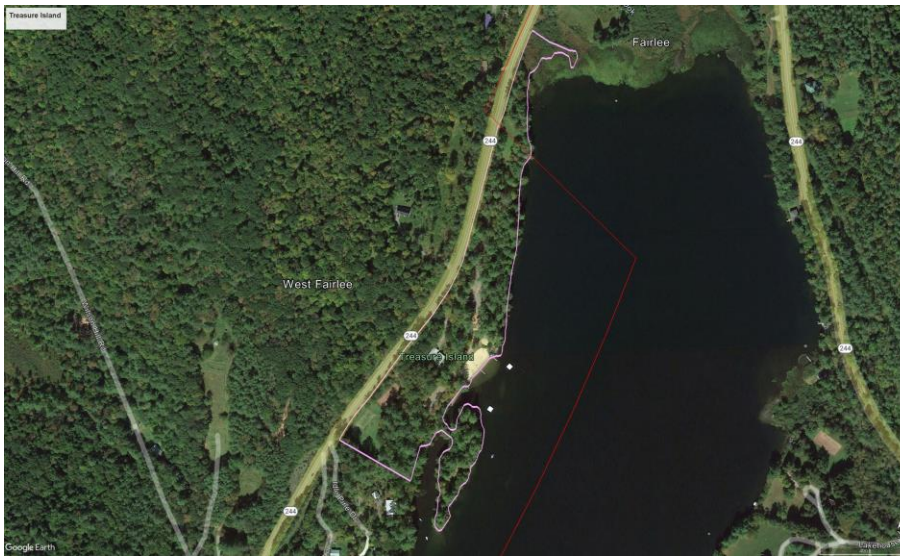
The purpose of this stewardship plan is to assist the Town of Thetford and volunteers with prioritizing the ongoing restoration and management of the natural areas at Treasure Island. The goal is to cultivate a resilient forest, resistant to invasion by non-native plant species, and able to provide diverse habitat for wildlife while also providing ecosystem services such as stormwater retention and reduced flooding, carbon sequestration, and clean air. The plan strives to balance the recreational uses on the property with the natural ecosystem and help provide many and varied opportunities for visitors.

2.0 Site Assessment

2.1 Location

Treasure Island is located on the northwestern shore of Lake Fairlee. The majority of the property is in West Fairlee but there is a small section at the north end that is located in Fairlee. State Rt. 244 forms the western boundary, the lake is the eastern boundary and private land abuts the property at north and south ends.

Figure 2 Treasure Island, Lake Fairlee



2.2 Management Unit Map (MUs)

For planning purposes, Treasure Island has been divided into four Management Units (MUs). Each management unit was delineated based on habitat type, use areas, and physical features. Figure 3 shows the location and extent of the management units.

MU1 is the northern-most block. This area requires restoration but will be the most undeveloped section of the park. The southern boundary of this management unit extends to the edge of the main

entrance road and includes the narrow strip of lakeshore between the eastern edge of the parking area as far south as the “art shack”.

MU2 is the most developed area of the park. It includes the parking area, most of the buildings, the beach area and the developed recreational areas such as the playground, basketball/pickle ball court and volleyball area. The southern boundary of MU2 is the access road that runs south of the paved basketball courts.

MU3 is the area known as Treasure Island. Although not technically an island, this area is attached to the mainland by a causeway. MU3 is heavily used and will require restoration to restore the balance of human use, protection of water quality and ecological benefits to the lake.

MU4 is the southern-most unit. This area is designated as a more rustic recreation area with paths, fields and a few rustic picnic areas. The unit includes a wooded areas at the southern end of the property.

2.3 Social Inventory

Treasure Island must accommodate a variety of recreational uses to balance with the ecological benefits of a natural shoreline.

Most visitors come to Treasure Island for swimming at the sandy beach. A total of 108 swim lessons were provided in 2022 and 305 season passes were sold to regular visitors. In addition to swimming, there is a volley ball court, playground, tetherball, horseshoes and a ball court. The court is paved and fenced with basketball hoops and has also recently been used for the very popular pickleball.

Throughout the summer season, Treasure Island hosts activities to appeal to children including weekly story hour with Emily Zillo, nature journaling with Megan Dubuque and an annual VINS nature program.

Beyond the immediate beach area there are picnic tables, grills and covered pavilions that can be used or rented for larger groups. All of the areas offer great views of Lake Fairlee. In 2022, the pavilion was rented to 10 -15 groups and the Island was rented to two groups.

Figure 3 Treasure Island Management Units



Treasure Island Management Units

There are a few short trails for hiking but these are in need of maintenance. The potential to connect with nature and observe the lake and its ecosystem exists but will be the focus of restoration efforts described later in this report.

The park is open from Memorial Day to Labor Day. During the summer season, ten gate attendants, two lifeguards and a beach manager were employed by the Town to run the facility.

A committee of volunteers from the community are part of the Treasure Island Exploratory Committee. In 2022, this committee met monthly and organized a property clean up, raised funds to design and purchase a new sign and purchased a new lifeguard chair. They also began work on a Management Plan for the property that will dovetail with this Stewardship Plan.

2.4 Ecological Inventory

A rapid assessment protocol, based on materials developed by the Green Cities Program (forterra.org/green-city-partnerships), was used to collect baseline ecological data for each management unit at Treasure Island. This protocol is designed to provide a general overview of site characteristics and vegetative cover. Data was collected by walking through each management unit and assessing average conditions. For each management unit, data was collected on aspect, slope, and soil properties, downed and standing dead wood, litter layer, canopy characteristics, understory species, invasive plant species cover and restoration needs.

The general site characteristics are summarized in Table 1. Treasure Island is a long narrow parcel from north to south that generally slopes down to Lake Fairlee. The western side is bound by State Route 244. The northern tip of MU1 extends into a shrubby wetland, the meadow area is generally wet and relatively flat. The topography at the southern end of MU1 becomes slightly steeper with small rock outcrops. MU2 slopes down from the road on an eastern aspect to a narrow flat area adjacent to the lake by the beach and mowed areas. MU2 is the most developed and heavily used area on the property. MU3 includes the “Island” which is level with sections of rock outcrops along the shoreline. MU4 is level near the road, then gently sloped down to the shore with a few rocky outcrops down to another level area along the shoreline.

The property is characterized as upland and riparian forest. Upland forests consist of a mosaic of conifers and conifer-deciduous mixed forest. Non-native invasive plant species are found in small areas of the park, with the highest cover occurring along the wetland edge in MU1.

Table 1: Site Characteristics

Management Unit	1 (North)	2 (Rec Area)	3 (Island)	4 (South)
Acres	3.8	4.1	1.3	2.3
Aspect	East	East, southeast	Level	East, southeast
Slope	Low	Low-medium	Low	Low-medium
Elevation	680-720'	680-720'	680	680-720'
Habitat Type	White Pine/hardwood and scrub shrub wetland	Scattered shade trees except more forested closer to the road	Hemlock, pine, oak	White pine/northern hardwood
Coarse Woody Debris (CWD)	11-25%	1-5%	< 1%	11-25%
Snags	1-5/acre	1-5/acre	1-5/acre	1-5/acre
Duff layer	3-5 "	3-5" in forest patch or none	<1"	3-5"
Special Features	Two beaver lodges, wetland, seeps	Beach, parking, buildings	Island	Rocky ledge and fields; leach field; former clay tennis court

SOILS

Treasure Island is part of the Vermont Piedmont, which literally means foothills, in this case, foothills of the Green Mountains. Over geologic time, extensive erosion has removed much of the metamorphic and sedimentary rocks that were originally here and what remains is a mixture of limestone, schist and granite. Generally, the landscape is comprised of gentle hills, broad valleys and quiet lakes.

Soils play a critical role in a healthy functioning ecosystem. By absorbing, releasing and purifying water, soils help supply clean water, regulate excess rainfall and help prevent floods. Soil also provides the anchor for plant roots. In turn, trees as well as other plants and vegetation, help stabilize soils protecting them from erosion. Organic matter that falls to the ground is an important factor in the creation of new soil to create the duff layer where decomposition begins.

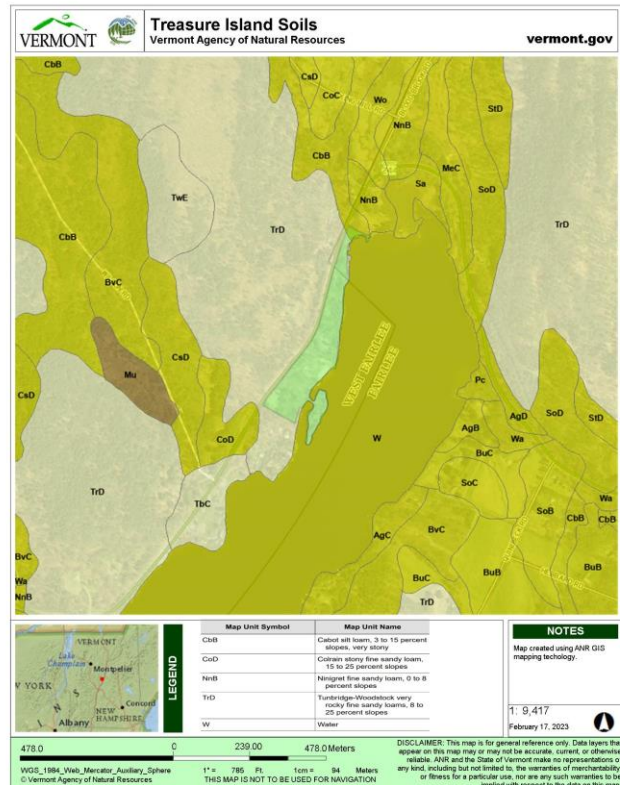
Microorganisms in the soil feed on the duff layer and help build soil structure. Activity of the microorganisms create spaces in the soil structure that allows water to infiltrate and hold moisture. In addition to trapping moisture, a tremendous amount of carbon (a major contributor to climate change) is also captured and stored in the soil through the activity of the microorganisms.

Understanding the characteristics of the soils will help determine what plants will thrive in different areas of the property. Considering the soil type will help with restoration efforts throughout the property.

The wetland area at the northern end of MU1 is composed of hydric Cabot silt loam. This soil is formed in glaciolacustrine deposits, a pebbly sand with littoral sediment that is predominately sand. The parent material consists of loamy lodgment till derived from mica schist and loamy lodgment till derived from limestone. The Cabot silt loam is poorly-drained with a shallow to root-restrictive dense substratum at about 10-20 inches. Cabot soils are found on slope ranges from 0 to 25 percent.

Figure 4 Soils of Treasure Island

The surficial geology of the remainder of the property is littoral (shoreline) sediment, predominately well sorted sand with no pebbles or boulders. The soils that formed here are classified as Tunbridge-Woodstock very rocky fine sandy loams found on sloped from 8 to 25 percent. Tunbridge soils formed in loamy supraglacial till of Wisconsin age derived mainly from micaceous schist, gneiss, phyllite, granite, and meta-anorthosite. Tunbridge soils are found on nearly level to very steep glaciated uplands. They are on the tops and sides of hills and mountains. Slope ranges from 0 to 80 percent.



Tunbridge is the official State Soil of Vermont. No. 9 of the Acts of 1985, designated the official state soil by the Vermont Legislature in March 1985. It was selected from among more than 160 different soil series in the state. As it is a typical "hill farm" and "sugarbush" soil, the Tunbridge series well represents the soil resources of Vermont. A soil formed in loamy glacial till, it has good potential for agriculture and forestry. According to Professor Richmond Bartlett of UVM, "It's the soil that makes Vermont hills greener than those either in New Hampshire or New York."

The Woodstock series consists of somewhat excessively drained soils that formed in loamy till on bedrock controlled, glaciated uplands. The soils formed in friable till derived mainly from light colored schist, granite, or gneiss. Woodstock soils are level to very steep soils on slope ranges from 0 to 60 percent.

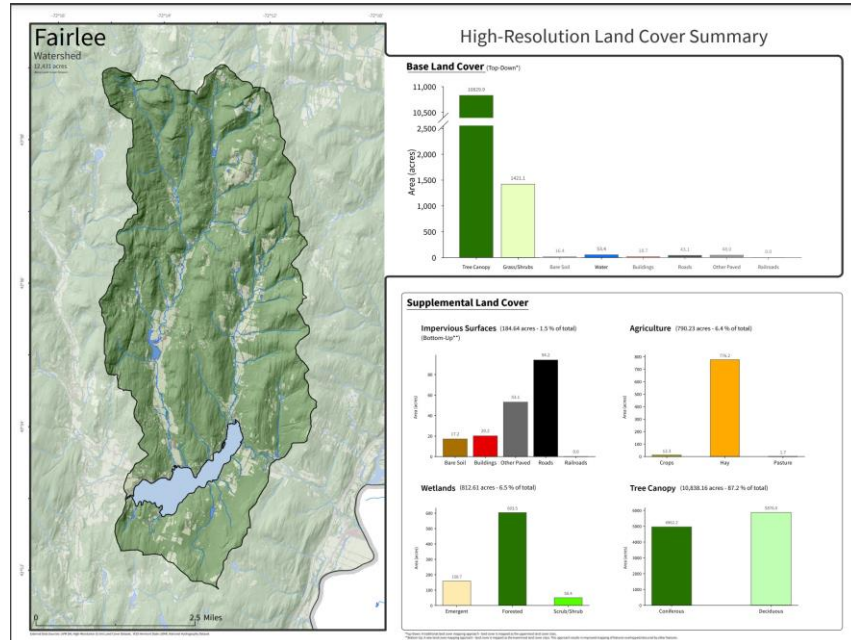
Hydrology

Treasure Island sits along the northwestern shore of Lake Fairlee. The Lake Fairlee watershed is 12,431 acres of mostly forested watershed with some agricultural

areas and rural development. According to the State High Resolution Land Cover data the Lake Fairlee watershed is approximately 87% forested, 6.5% wetland, 6.4% agriculture and 1.5% impervious surfaces such as roads and buildings.

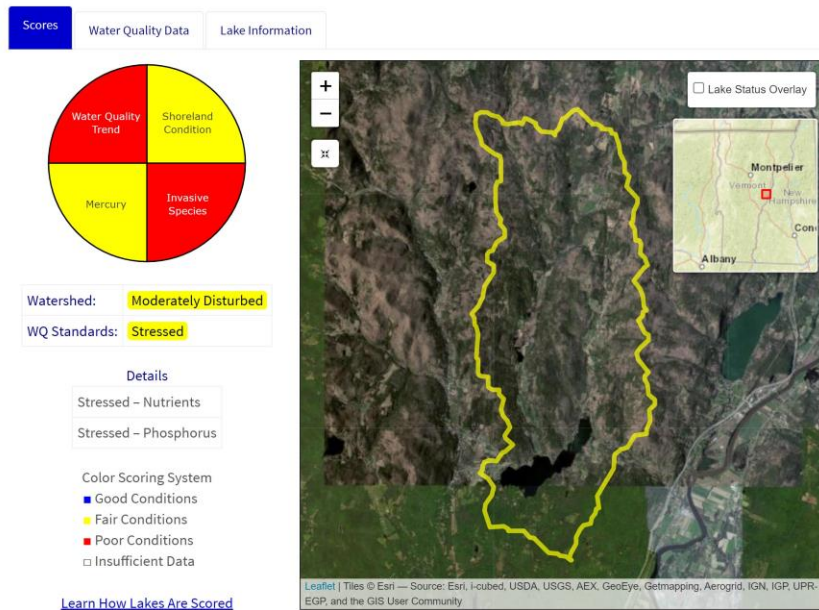
Lake Fairlee drains into the Ompompanoosuc River which flows into the Connecticut River and ultimately to Long Island Sound. Lake Fairlee has a surface area of 461.8 acres with a maximum depth of 50 feet although the deepest area at the north end of the lake. The water depth near Treasure Island is around 32 feet.

Figure 5 Lake Fairlee Watershed



According to the Vermont Lake Score Card the watershed is moderately disturbed and the lake itself is stressed, showing a trend to increasing phosphorus and the presence of invasive aquatic Eurasian watermilfoil *Myriophyllum spicatum*.

Figure 6 Lake Fairlee Scorecard



Treasure Island abuts the wetland complex at the north end of the lake that is associated with the outflow of Blood Brook. There may be additional pocket wetlands on the property that will be inventoried and mapped in 2023 by an engineering firm that has been contracted with the Town of Thetford.

The hydrology of the site has most likely been altered over the years. There are drainage culverts under Rt.244 that flow onto the property. It appears that the camps created ditches and added culverts to convey water across the property and into the lake. In the past, it seems likely that some areas were filled or leveled to accommodate various buildings and uses. Most of the buildings have been removed but ditches and culverts can be found throughout the property in various states of disrepair. Stormwater management is an ongoing issue related to the parking area and beach recreation areas.

Native Vegetation & Wildlife Habitat

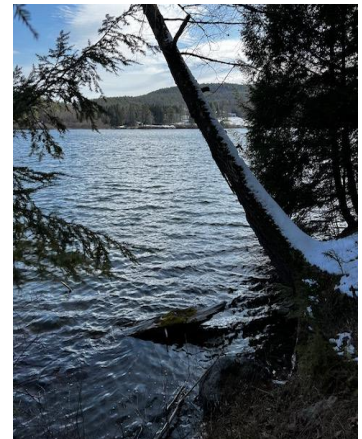
All of Treasure Island is a shoreline riparian buffer and it plays an important role protecting the health of the lake. Riparian forests support many different functions: trapping sediment, storing phosphorus and nitrogen, stabilizing shorelines, reducing flood waters, moderating water temperatures, providing wildlife travel corridors, supporting in-stream and terrestrial habitat, while also providing recreational opportunities.

According to the New Hampshire Habitat Action Plan, the quality of shoreline habitat may be the single biggest influence on the abundance and variety of wildlife that live near a waterbody. In Vermont, the LakeWise Program reports that about 45% of Vermont lakeshores have been developed in ways that have cleared the shores of their natural communities of native vegetation. Yet, a whopping 60% of protein for freshwater fish comes from insects that have fallen into the water from their near-shore native plant host.

Several features of riparian forest areas make them attractive to a wide diversity of wildlife. The lake creates a natural opening in the forest, allowing sunlight to reach the forest floor. The greater warmth and light promote multiple layers of vegetation to develop along the shoreline. Mosses, lichens, ferns, and flowers thrive in these sunny, moist conditions. A variety of shrubs and trees create a layering of vegetation up to the forest canopy. The sheer diversity of vegetation supports myriad species of wildlife from salamanders, beetles, and small mammals on the forest floor to songbirds, bats, and raptors in the overstory.

Riparian areas also tend to have an abundance of cavity trees and coarse woody debris. Dead, dying and downed woody material is important, and sometimes rare, along developed shorelines. Bats roost under the loose bark of dying trees, while flycatchers, kingfishers, bald eagles, and other birds use snags along the water for perching and feeding. Cavity trees provide nests for numerous species including barred owls, woodpeckers and chickadees. Soil microorganisms feed on decaying woody material to nourish the soil while salamanders and spring peepers can often be found under moist decaying wood. Treasure Island has the ability to provide these essential habitat features. Close to a house or building it may not be safe or aesthetically acceptable to leave a large dead tree, but those decaying trees are host to countless insects and attractive to the birds and mammals that feed on them. Allowing the same dead trees to fall to the ground to decay or into the lake are also critical habitat features that other shoreland owners may not be able to offer on their own property. When those trees land in the water, they provide shelter and spawning areas for aquatic organisms, sunning areas for turtles, perches and feeding areas for numerous species.

Figure 7 Wood is Good. Allowing trees to remain partially submerged in the lake provides valuable habitat.



The presence of year-round water adds another component to the diversity to the riparian forest. Some species such as beavers, turtles and otter depend on both the forest and the water for food, breeding and shelter. Leaves, twigs, and other organic matter from streamside vegetation is a major food source for aquatic organisms as well as providing shelter and cooler water temperatures for spawning and raising young.

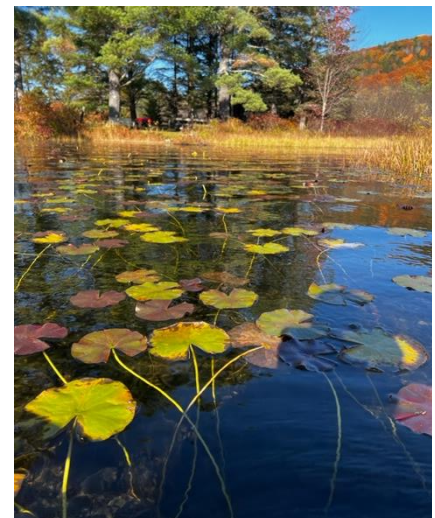
Riparian forests are frequently used by birds and mammals as travel corridors. Songbirds use riparian forests as rest stops during migration. Other animals disperse from their birthplace using riparian forests. Deer wintering areas are often associated with softwood stands in riparian areas.

Rather than striving to manage for a specific species, it is often more productive to consider the diversity of the site. There is both a spatial and temporal component to managing for habitat diversity. Healthy forests have high vertical diversity, from thick duff at the ground level, to dense

shrubs and regeneration of tree species in the understory, mid-canopy small trees to mature canopy trees. Over time the successional stages of a forest from saplings that provide dense cover to large mature trees that produce mast and accommodate large cavities are all important. Species depend on different stages of forest development at different times of year and different development stages to meet their needs. In an unmanaged ecosystem, forest disturbance comes from natural events such as fire, beaver activity or microbursts that might reset the development stage of a forest. In a managed system we might intervene to artificially maintain a meadow in an early succession stage with dense shrubby growth or create an opening with a small patch cut. Part of management also includes thinking on a time scale that is aligned with a tree; at the moment there are some large diameter trees, but in 50 or 100 years will there be small trees that can mature into large diameter trees for the future to meet the needs of species that require large cavities.

Another important component to the riparian forest habitat is the littoral zone: the nearshore zone where aquatic and terrestrial environments intersect. Native aquatic vegetation, submerged rocks, and trees that have fallen into the water are all features of high-quality shoreline habitat. The best shoreline habitat has large areas of diverse underwater vegetation such as coontail and bladderwort mixed with aquatic plants such as pickerelweed and yellow pond lilies that grow in scattered stands like the area at the north end of the lake. Where these shallow areas are found near deep water, wetlands and upland forest the habitat becomes productive hunting ground for great blue and green heron, otter, mink, and larger fish such as eastern chain pickerel and yellow perch. Loons require undisturbed shoreline for nesting and have been successfully raising chicks just off the shore on MU1. Warbling vireos and song sparrows' nest in the branches of shoreline trees and common mergansers use dead trees. Fallen trees in the water are important for sunfish and the underwater branches are host sites to a variety of frog's egg masses. Painted turtles are frequently seen sunning on partially submerged branches.

Figure 8 Nearshore habitat at the North end of the Lake.



The wetlands at the north end provide essential habitat and food for numerous wildlife species. In addition to serving as a food source, the dense vegetation provides places for wildlife to build homes and to hide from predators. Wetlands provide important nesting habitat for migratory birds and waterfowl. For many species, like the Canada goose, wood duck, great blue heron, muskrat, beaver, snapping turtle, and bullfrog, wetlands are the only places they can live. For others, such as black bear, moose, deer, wood frogs, and marsh hawks, wetlands are important for a part of their life cycle or during certain times of the year.

The shallow protected cove between MU3 and MU4 is likely an important nursery and spawning habitat for many fish. Areas like this that support young fish, amphibians and insects also attract their predators such as hawks, herons, ducks, mink, raccoons, and northern water snakes. Predatory fish such as bass, pickerel and pike will also forage in shallow aquatic vegetation. Crayfish can be abundant in rocky shallows like this. Aquatic plants provide cover for aquatic invertebrates such as snails and dragonfly larvae.

Figure 9 Amy Picotte, retired DEC Lakes and Ponds Program, holds up a crayfish from the shallow cove between MU 3 &4



Situated between Rt 244 and the lake, the influences of the lake and the road are profound. The species that exist here must be adaptable to human activity: cars, boats, and recreational users. This disturbance is unavoidable, however, for much of the year Treasure Island is quieter. The unique opportunity on this property is to provide features in the riparian forest that may be missing on other areas of the lake.

Lists of species that have been identified near Treasure Island can be found in Appendix 4.1. Please note that these are only partial lists of species that are likely to exist in the area.

Invasive Species

The history of disturbance on this property, the influence of the public road, and the amount of sunlight that reaches the forest floor could easily result in a property over-run with invasive species. It is fortunate that there are only a few areas where invasive plants have established. It is even more fortunate that the colonies are small and can still be controlled by manual removal. Part of the stewardship of the Treasure Island property should include regular inventories conducted at different times in the growing season to identify any other populations of invasive plants that may be present. Early spring may identify ephemerals that will be gone later in the year. One of the single best actions to protect the health of Treasure Island is to monitor for new populations of invasive species and remove them before they become well established.

Control of invasive plants has far-reaching implications. Many invasive plants leaf out earlier in the year and are able to capture more nutrients than native plants. Since the native wildlife has not evolved alongside these foreign plants, they often find them unpalatable. This begins a cycle where the invasive plant is further able to out-compete native plants. Often the seeds produced by invasive plants may be palatable to wildlife but not provide sufficient calories or nutrients. Additionally, if the seeds are palatable, they may be eaten and dispersed through droppings which allows them to colonize new areas. Over time, the invasive plants can establish dense thickets suppressing native understory plants as well as thwarting native tree regeneration. In some cases, the invading plants can alter the pH of the soils which makes them unsuitable for the native plants to establish. A monoculture of invasive plants can create its own microclimate which may be attractive to undesirable species, harbor disease or create an area that is completely unsuitable for native wildlife.

Japanese barberry (*Berberis thunbergii*) is an ornamental shrub that was introduced to this country through the nursery trade and spread easily via bird droppings. It is a highly adaptable plant that can tolerate a variety of dry to moist soils and sun to shade conditions. Barberry can also spread by layering which occurs when a branch touches the ground and forms roots. Over time, large areas become dense with a nearly impenetrable thicket of the sharp spiny shrubs. If enough leaves accumulate, they will raise the pH of the soil to a point that is not suitable for many native plants adapted to our more acidic soils.

Figure 10 Japanese barberry. Photo credit Chris Evans, University of Illinois, Bugwood.org



One additional cause for concern is the link between barberry and Lyme disease. Research at the Connecticut Agricultural Experiment Station by Dr. Scott Williams and Dr. Jeff Ward has found that dense barberry thickets create a humid, slightly warmer microclimate that is favorable to ticks. They found a higher abundance of ticks infected with the causal agent of Lyme disease from Japanese barberry infested forests. The good news is that management to control Japanese barberry can help reduce tick abundance. See Appendix 4.2.2 for more information about the research related to barberry and ticks.

The good news is that the population of barberry is small at Treasure Island. The highest abundance of barberry was observed in MU1 near the edges of the wetland. Small populations can be controlled manually which may be the best, least toxic and most economical approach to control. The root system is shallow and can be pulled by hand fairly easily. There are also various tools available that provide leverage to make wrenching the plants from the ground easier and will protect volunteers from the sharp spines along the branches. Resprouting from any missed roots or from the seed bed will likely require a repeated effort over several years. The goal is eradication, the reality is closer to ongoing efforts to remove new plants as they sprout from buried roots, seeds in the soil or new introductions. Guidance for management of Japanese barberry can be found in Appendix 4.2.

The other invasive shrub that is found in a few locations throughout Treasure Island is honeysuckle. Four invasive species of honeysuckle are found in Vermont: Morrow's honeysuckle (*Lonicera morrowii*), Tartarian honeysuckle (*Lonicera tatarica*), amur honeysuckle (*Lonicera maackii*), and Bell's honeysuckle (*Lonicera x bella*). Invasive shrub honeysuckles are often much larger than native honeysuckles and can be identified by their opposite leaves. Invasive honeysuckle also has a hollow stem center. The opposite leaves and hollow stem are the easiest way to tell the difference between invasive and native plants (native species have solid white stem centers). Shrub honeysuckles often leaf out much earlier and retain leaves much later than native species which also makes them easier

to identify. The flowers can be yellow, white, or pink. Honeysuckle produces small, orange to bright red berries that ripen in early fall and are eaten by birds, which help to spread the plants further.

Figure 11 Morrow honeysuckle, Photo credit Leslie J. Mehrhoff, UCONN

Due to the fact that the populations are small manual control is likely the best method of control on Treasure Island. Honeysuckle plants are scattered throughout the property in each of the management units such as along the wetland area in MU1, along the causeway in MU3, and along the open areas in MU4. The invasive shrub honeysuckle is relatively easy to pull by hand or with some type of weed wrench that offers more leverage. For more guidance on honeysuckle management see Appendix 4.2.3.



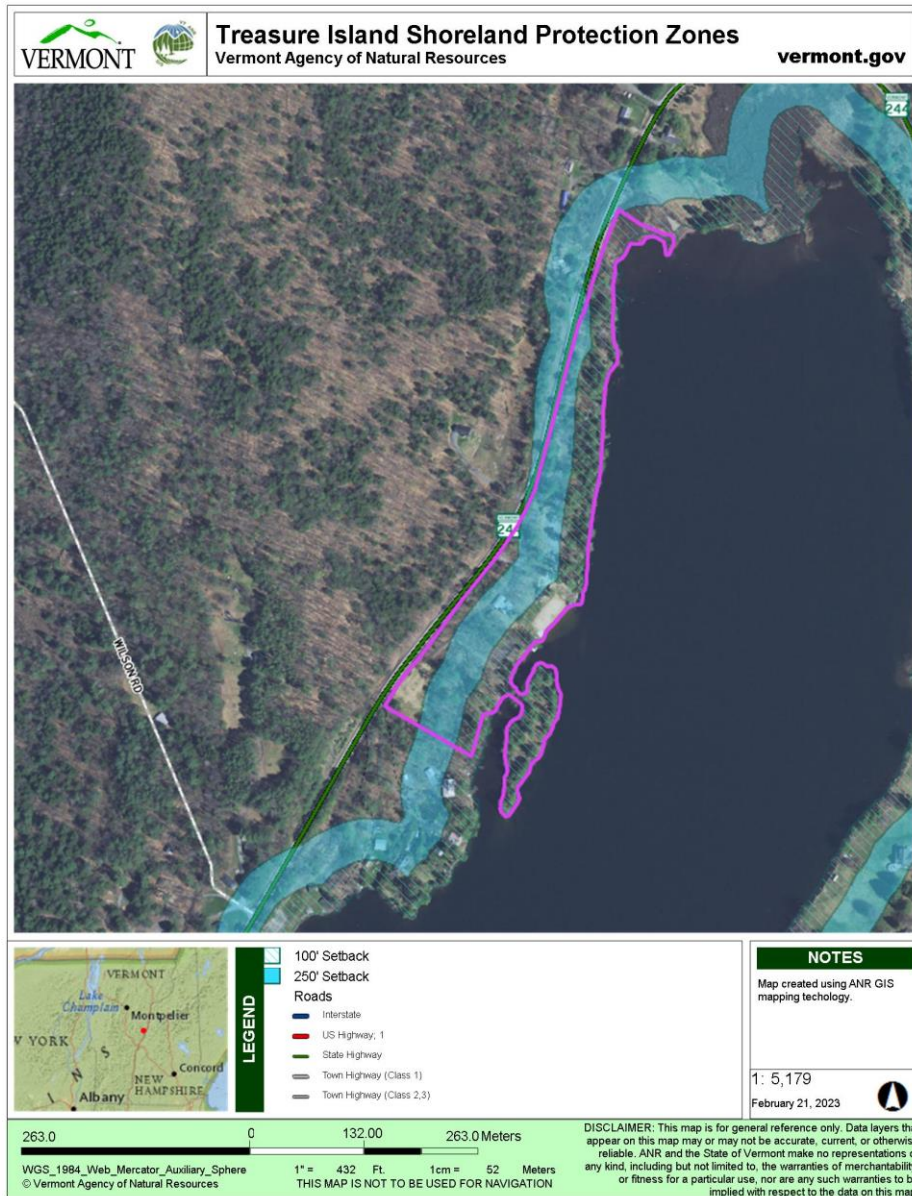
Removal of invasive plants and noxious weeds does not require a permit under the Shoreland Protection Act (See section 2.5 for more information about the SPA).

2.5 Shoreland Protection Act (SPA) & Vermont Wetland Rules

Effective July 1, 2014, the Vermont Legislature passed the [Shoreland Protection Act](#) (Chapter 49A of Title 10, §1441 et seq.), which regulates shoreland development within 250 feet of a lake's mean water level for all lakes greater than 10 acres in size. The intent of the Act is to prevent degradation of water quality in lakes, preserve habitat and natural stability of shorelines, and maintain the economic benefits of lakes and their shorelands. The Act seeks to balance good shoreland management and shoreland development.

The map in figure 12 shows the approximate area of Treasure Island that falls within the 250' buffer jurisdiction of the Shoreland Protection Act. The Lake Fairlee Association publication, "At Home by the Water" and the DEC's "Shoreland Handbook" (dec.vermont.gov/ShorelandHandbook) both offer helpful guidance about the Shoreland Protection Act. Any planned activities at Treasure Island should be reviewed to ensure compliance with the SPA.

Figure 12 Shoreland Protection Act Zones



The Vermont Wetland Rules may also be relevant to activities planned for Treasure Island. The Town of Thetford has contracted to have the wetlands delineated on the property which will be helpful to determine compliance with the rules. According to the ANR website, “any activity within a Class I or II wetland or buffer zone which is not exempt or considered an "allowed use" under the Vermont Wetland Rules requires a permit. In order to obtain a permit, an applicant must show that they are unable to perform the activity outside of the wetland or buffer zone and that they are not lowering the quality of the wetland's protected functions and values. Wetland permit applications take 3-6

months to review dependent on the complexity of the project and completeness of the application. Applicants must plan accordingly.” To learn more about the permitting process visit: dec.vermont.gov/wetlands/jurisdictional/permit-info.

2.6 Climate Resiliency

According to the Agency of Natural Resources, Vermont Climate Council climatechange.vermont.gov climate change is here and it is impacting Vermont in numerous ways. The temperature in Vermont has risen by about 3 degrees since the beginning of the 20th century and the lakes and ponds are thawing 1-3 days earlier per decade. Vermont is also getting wetter, by about 6 inches since 1960. The Federal Government also hosts a climate resiliency scorecard, *Climate Mapping for Resilience and Adaptation*. It pulls data from several different Federal Agencies and uses that data to model climate change under low and high emissions scenarios. Between 2015-2044, Orange County is projected to have 6 days with a maximum temperature >90 degrees compared to just 1.4 between 1976-2005. Orange County, Vermont averaged 39.4 inches of total precipitation between 1976-2005; models show that increasing to 41 inches from 2015-2044. Increases in precipitation may come in more concentrated events which results in more intense storm events as well an increase in the average number of dry days --from 158.9 and is modeled to increase slightly to 160.2. This may mean more frequent or prolonged drought between precipitation events. All of these changes are occurring at a rate that is much faster than many plants may can adapt.

Worsening storms produce large runoff events that contribute to erosion and nutrient loading in our waterbodies. These conditions can lead to cyanobacteria outbreaks like the one at neighboring Lake Morey during the late summer of 2022. Periods of heavy rain mixed with longer periods of drought and warming temperatures may also be favorable to invasive species that are able to out-compete native plants.

All of this change is expected to impact biodiversity according to the VT Climate Council. As the climate situation worsens, 92 bird species in Vermont, including the common loon and hermit thrush are expected to disappear from the landscape with the next 25 years. Warming trends are also expected to favor white-tailed deer which can lead to increases in browsing intensity. High deer populations in other parts of the northeast have impacted forest regeneration, shifting the composition of the forest to unpalatable species such as black birch and beech and making regeneration of high value species such as oak and cherry more difficult. Higher deer populations and warmer temperatures also favor the ticks that carry Lyme disease. Deer are a host for the ticks and an important vector for the spread of Lyme disease to humans and pets.

It is difficult to anticipate what impacts the climate changes will have on the region. Will Vermont see an increase in population as climate refugees seek to escape rising temperatures? The answer is likely to play out over the next few decades. What about the health of our forests and lakes? Trees for shade and lakes for cooling may become increasingly in demand putting pressure on areas like Treasure Island as a place for people to cool off. Warmer temperatures and longer drought periods could also shift the moisture regimes, making the forest floor drier and more prone to fire. Pests and

disease that where once unable to survive the cold winters may move into the area if it is warmer all year.

Preparing for the unknown is extremely difficult. However, a diverse forest that is composed of a wide variety of species in different age classes may be a simple step to being prepared. The genetic bank of the trees may be key to how those plants adapt to changes. Some will perish with the changes but some species may express a genetic resiliency that allows them to cope with a changing climate. Allowing trees to become very mature, produce prolific seeds, and regenerate is part of the picture. Maintaining other areas in an artificially young stage, such as a meadow, could also help protect habitats for the future. A mosaic of pliable young saplings that are able to withstand high wind or ice events intermixed with more mature trees that produce seeds to support wildlife and germinate if conditions change rapidly will help prepare for the unknown. Treasure Island is a small property but climate resiliency begins with small steps that help ensure diversity to prepare for the future.

2.7 Other Helpful Documents

There are several publications that include Lake Fairlee and provide helpful context and guidance. These documents pull together current data and research to help protect the resources of Vermont.

Basin 14 Tactical Basin Plan

The 2020 Basin 14 Tactical Basin Plan (TBP) covers 20 towns in the three counties of Orange, Caledonia, and Windsor, from Peacham to Hartford. Basin 14 includes the Stevens, Wells, Waits and Ompompanoosuc Rivers, Peacham bog, Lake Groton, Harveys Lake, and Lake Morey, and Lake Fairlee. The Tactical Basin Plan provides an assessment of the health of the basin and identifies 56 water quality strategies related to agriculture, developed lands, wastewater, and natural resources – forests, lakes, rivers, and wetlands. The plan also includes information about how landowners, watershed organizations, and communities can access funding and technical assistance to help protect and restore water resources. For more information about the Tactical Basin Plan visit dec.vermont.gov/tactical-basin-planning/basin14.

Wildlife Action Plan

The 2015 Wildlife Action Plan is a wildlife conservation guide for the entire state. It includes strategies that almost any individual or organization can implement. The most common strategies proposed focus on impacts to the *Species of Greatest Conservation Need*. Recommendations include habitat restoration; the provision of education and technical assistance to landowner and land managers; providing financial and economic incentives and encouraging wildlife-compatible resource use. To view the plan visit: vtfishandwildlife.com/wildlife-action-plan

Lake Fairlee Lake Watershed Action Plan

The Lake Watershed Action Plan (LWAP) for Lake Fairlee will be finalized in June 2023. The LWAP is an assessment to identify the greatest threats to the lake ecosystem, including impacts on water quality and wildlife habitat from stormwater runoff and from altered, cleared, or converted shorelands. LWAPs are designed to answer specific concerns about each lake, for example, what land uses within the watershed cause the greatest stress to a lake ecosystem. Each lake has different land use patterns and understanding exactly which ones are causing degradation to the lake will help guide restoration and

protection efforts. The LWAP assesses and compares the varying land uses and provides a ranking of the greatest threats to the lake along with recommendations for fixing the problems. The LWAP combines an assessment of a lake's shoreland, tributaries, and hydrologically connected roads and leads to an individual planning guide that prioritizes restoration and protection actions for that lake. The LWAP can also help identify cumulative impacts on a lake ecosystem, thereby helping lake stakeholders "see the bigger picture" and identify situations where the combination of individual stressors may be leading to declines in lake health. The final LWAP will be available in Spring of 2023:
<https://dec.vermont.gov/watershed/lakes-ponds/lakeshores-lake-wise/LWAP>

At Home by the Water: Caring for Lake Fairlee and Its Watershed

The Lake Fairlee Association published a handbook in 2022. This collaborative effort was created to inform and educate Lake Fairlee and watershed homeowners as to best practices that homeowners, can do to help protect and preserve our fragile lake and watershed ecosystem. A digital copy can be found here: lakefairleevt.org/at-home-by-the-water---caring-for-lake-fairlee-and-its-watershed

3.0 Stewardship Recommendations

The purpose of this stewardship plan is to improve the health and long-term sustainability of the Treasure Island Forest and Lake Fairlee while balancing the need to provide a valuable recreation area for the public. The recommendations in this Plan will primarily be implemented and maintained by members of the Treasure Island Exploratory Committee, volunteers, and Town of Thetford staff.

After years of varied land use and some disrepair, defining a vision for Treasure Island that enhances the ecological benefits of the property and improves the recreational experience for the community is paramount. Ongoing maintenance will be a key factor in the success of any restoration efforts. Controlling invasive species needs to be a yearly activity of monitoring and removal. Enhancing the shoreline buffer with plantings will require regular mulching and perhaps watering until they become established. Implementing measures to manage stormwater to reduce sediment and nutrients from entering the lake is an ongoing maintenance commitment. The Stewardship Recommendations are laid out by discrete projects in each Management Unit to guide the efforts to restore Treasure Island. As time and money become available these projects can be addressed. By listing them in a central location it is possible to prioritize how to spend funds or to guide volunteer efforts. The ultimate goal is the reward of working toward a common vision and to periodically review the plan to measure progress. The recent projects such as the new sign, fencing, and mulch are just the beginning, each improvement contributes to developing a sense of pride for the community to enjoy the property and invest in its future.

Figure 12 shows that almost the entire property falls under the Shoreline Protection Act, and portions of the property are also within the wetland's jurisdiction. Any projects conducted on the property should be carefully reviewed to determine if they require local, State or Federal permits. It is always better to involve the permitting entities early in the process so that they may guide projects in an acceptable direction.

Management Unit 1

Despite a history of livestock housing and camp buildings, the north end of the property is currently the most undeveloped. Designating this area as a natural area that buffers the wetland complex, the loon nest and the beaver lodges is compelling. Limiting human disturbance and focusing on activities intended to enhance the habitat is the focus of MU1.

Figure 13 Recent beaver activity near the wetland at the north end of the property.



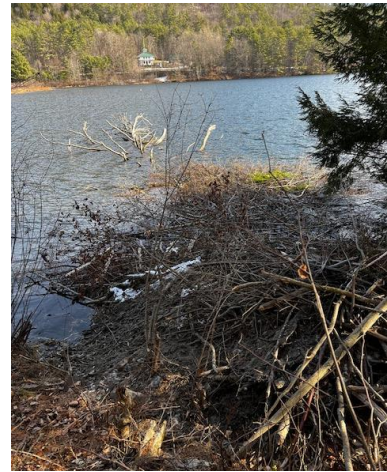
The wetlands at the northernmost portion of the property are part of an alluvial fan of deposits from the outflow of Blood Brook. These wetlands provide myriad benefits to the lake: filtering sediment and nutrients, providing important habitat for feeding, nesting and cover for wildlife, mitigating storm events and specialized plant habitat. Protecting this area from human disturbance may be one of the best ways to enhance the entire habitat of Lake Fairlee. For example, loons are very sensitive to disturbance yet they are successfully nesting and raising their young just off shore. The dense shrubby growth in a wetland provides ideal cover for aquatic and terrestrial organisms to breed and raise their young—a time when they are most vulnerable to predation and disturbance. While keeping the wetland area protected is critically important, controlling the spread of invasive plants is also an important step. Removing invasive plants before they spread will ensure that native

vegetation thrives and is able to provide essential host plants and nutrient-rich food. There are isolated populations of barberry and honeysuckle found along the edge of the wetland and parts of the shoreline. Since the populations of these invasive species are relatively small, removal and disposal of them should be a top priority. Additional information about effective control of these two invasive species can be found in Appendix 4.2.

The northern end of Treasure Island (MU1) is characterized by a shrubby wetland, transitioning to an open canopy upland area with pockets of wet seeps and open wet meadow. The large diameter white pine found here provide excellent habitat diversity as growing stock, standing snags and downed coarse woody debris. The wet meadow is slowly giving way to alder and white pine regeneration and even some black ash. Sugar maple, American beech, ash and oak are found scattered throughout the unit. Understory trees such as dogwood and serviceberry are also found in the edge habitat. A natural accumulation of organic matter has created a healthy duff layer along with a good percentage of downed coarse woody debris. The canopy is quite open with large gaps from dead trees, beaver activity, the wet meadow, the road and the lake. There is greater canopy closure toward the southern end of MU1 where the slope increases, additional rock outcrops are present and the percentage of hemlock is greater. The soils are more mesic further south with less standing water as can be found in the north end.

Protecting and enhancing the natural forest in MU1 should primarily be a hands-off decision. The canopy is very open with a lot of light reaching the forest floor. The large diameter trees growing on the site are providing desirable perches and nesting sites. As the large trees senesce, the dying branches and cavities that are formed create important food sources and places for nesting. Bald eagles often prefer the dead branches of emergent pines for perching and hunting along lake shores. As the trees fall to the ground the large coarse woody debris slowly decays and returns valuable nutrients to the soil. Decaying logs also function as sponges to absorb water, slow the flow of surface water and allow water to infiltrate the soil. These soft, moisture-retentive decaying logs often become nurse logs to foster the growth of future generations of trees. The accumulation of the natural duff layer also provides a soft, spongy forest floor that absorbs water and provides a moist habitat for a variety of forest floor dwellers such as salamanders. If large trees fall into the lake they create features for feeding, spawning and sunning, enhancing the aquatic ecosystems. A “do-nothing, let it be messy” approach to the forest is very desirable. Allowing the chaos and messiness of nature to flourish in this area provides excellent forest habitat for a wide variety of terrestrial and aquatic organisms.

Figure 14 Beaver lodge along the shoreline of MU1

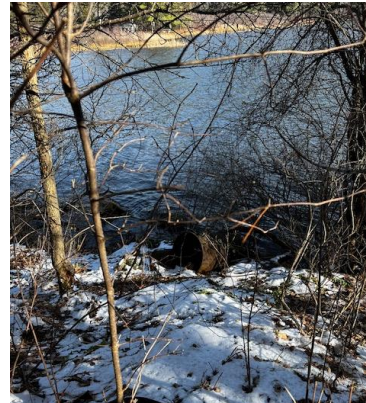


There is a meadow in the northwest corner that is quite wet most of the year. Natural succession is shifting the composition from meadow to white pine and alder. If left alone the area would likely revert to white pine forest. Old fields, such as this one, offer a habitat type that is lacking in many areas around Lake Fairlee. One way to maintain this area would be to brush hog it on a roughly three-year interval. Since the soils are so wet, this treatment would have to be conducted very late in the year after the ground has frozen but before there is thick snow cover. There are many shrubby species that tolerate periodic mowing and resprout vigorously after being cut back such as the alder, red-twig dogwood, willows and witch hazel. Shrub habitat near water is preferred by grouse, American woodcock, rabbits and other small mammals. Periodic mowing would also allow wildflowers to produce flowers and seeds that help support our native pollinators and songbirds. Enrichment planting of native perennials that tolerate moist soils and shrubs that tolerate periodic mowing could be added to diversify the meadow environment. The Federation of Vermont Lakes and Ponds has produced an excellent publication “[Landscape Design for Healthy New England Lakes: Easy-to-use design templates and planting plans](#)” that provides helpful lists of species and guidelines for selection of native plants that could be used in this area.

At the northern end of MU1 there is an access area that is somewhat overgrown and difficult to locate but where vehicles can drive onto the property. It is very wet in this area and rutting is a problem. To allow access to maintain the meadow and to prevent unauthorized access, installation of a gate may be needed. In addition, a gravel apron off the Rt.244 could help protect the soils from compaction and rutting.

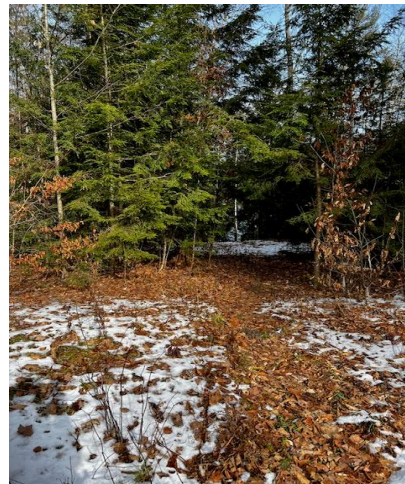
To further enhance the habitat value of MU1, the miscellaneous debris in this area should be addressed. There is a pile of rebar and plastic left after an aquatic treatment that was conducted in the past. Selling or reusing these materials may generate a little income and get them off the property. There is also a brush pile that contains dimensional lumber that should be removed or burned. An old dock is fastened to the shoreline and partially sinking. It is adjacent to a beaver lodge. The dock should be examined to see if the flotation material is disintegrating Styrofoam. The dock may be providing some habitat but it may be polluting the lake. Removing this dock would likely be the best course of action. At the very southern boundary of MU1 is a barbecue grill near the art shack. While not exactly debris, this may not be the most appropriate location for picnicking. Removing the grill and re-directing this type of recreation to other areas of the property could be helpful to restoring the shoreline. The grill area is a large compacted area that will require some native plantings to help restore the area.

Figure 15 Old junk found on the property.



There is an unmaintained trail that follows the shoreline. It appears to exist due to visitors who explore the shoreline. Its location immediately adjacent to the edge of the lake is less than ideal. Compacted soils and trampled vegetation may be prone to erosion and detrimental to that lakeshore habitat. A decision to re-route the trail or to dissolve it needs to be determined. If the trail is to be kept it should be relocated back from the shore, the natural duff layer should remain intact and access to the lake should be limited to defined areas that are naturally armored with bedrock. Guidelines on path construction near lakes can be found in in Appendix 4.3. If the decision is made to abandon the trail, then a restoration effort is required to block the trail, replant areas that area badly compacted or eroding and re-direct visitors to more appropriate areas of the property. There is an undeniable appeal to scrambling along the shoreline so eliminating this trail is likely to require careful consideration and ongoing efforts.

Figure 16 An unofficial trail that hugs the shoreline.



The Town of Thetford has contracted with an engineering firm to have the wetlands delineated at Treasure Island. When the report is released there may be additional projects that are identified. Regardless of the findings, it is clear that some of the drainage has been altered in MU 1. There are culverts under Rt.244 that flow into large cement box culverts that may have been drinking troughs for livestock. There are also old drainage pipes that surface close to the shoreline. Restoring the

natural hydrology of the site may be a large undertaking. It would require additional studies, permitting and significant fundraising, but could be an important step to restoring the habitat of MU1. In the short-term, covering the exposed pipes and cement boxes is an important safety step for both humans and wildlife.

Figure 17 Culverts and drains on MU1



MU 1 ACTION ITEMS:

Issue	Description	Action	Priority	Duration
Invasive Species	Small population of barberry and honeysuckle	Remove manually and dispose of carefully	High	Ongoing monitoring will be essential
Rebar + Plastic	Materials that were left from the invasive treatment in the lake are piled near the shoreline	Sell	High	Short term dispersal
Miscellaneous Junk	Organic material as well as lumber piled in the meadow and on the shore	Remove and/or burn	High	Short term dispersal
Shoreline Trail	Trail is damaging shoreline habitat	Relocate or block	High	Will depend on the action
Culvert and Pipes	Perhaps old animal watering as well as remnants of other drainage	Safety concern, cover or remove	High	One time action

Wet Meadow	Early succession habitat type	Mow every 3 years	Medium	Every 3 years
Access to Meadow	Small driveway into the meadow	Install gate or block/restrict entrance	Low	Useful for removing debris or maintaining the meadow. Monitor over time.
Wet Meadow	Enrichment planting	Plant native wildflowers and shrubs	Low	Could be on-going

Management Unit 2

MU2 is the high-use recreation area that includes the parking area, most of the buildings and the beach swimming area. A LakeWise evaluation was conducted in 2022 that focused almost exclusively on this area and MU3 The Island. That assessment is included in Appendix 4.4. The recommendations that are described there are summarized in the Action Items table for MU2 & 3.

Figure 18 LakeWise focused on addressing erosion issues related to storm water. This picture illustrates the issue of stormwater carrying sand from the beach into the lake.



Management Unit 2 contains the majority of the developed recreational area including parking, buildings, mowed lawn, sand beach, playgrounds, volleyball court, basketball court and access roads. There are a few remnant patches of trees along the road and around the main house. The majority of this Unit is dedicated to recreation and the duff layer is generally removed and the soils appear compacted. As such, erosion was observed from stormwater moving across the parking area and picking up sand from the beach and volleyball courts to transport into the lake.

The forested area near Rt. 244 and the main house contains a good diversity of deciduous hardwoods that produce valuable mast for wildlife including maple, beech, oak and birch. The understory contains regeneration and the duff layer is thick. There are also a few scattered hemlock and white pine throughout these areas. These patches of trees provide shade, absorb stormwater and excess nutrients and enhance the rustic feel of Treasure Island. Close to the beach any danger trees have to

be removed for safety, but allowing the natural forest in other areas provide important habitat, protects clean water and offer privacy from Rt. 244.

There are a few simple steps that will help to reduce the impact to water quality in the lake, while also providing a positive experience for visitors. Recently the playground area was upgraded with mulch and a small garden was created near the building. These two changes are visually pleasing but also trap stormwater and allow it to infiltrate the ground instead of picking up sediment and carrying it to the Lake. Cueing from these low-cost but effective improvements, adding gravel or mulch around other high use areas such as the picnic tables helps reduce compacted soils while creating a pleasing surface for the tables. Any existing shoreline vegetation should be protected. Pruning branches instead of removing plants is an easy way to protect the important stabilizing root systems and frame an attractive view of the lake for visitors.

MU 2 ACTION ITEMS

Issue	Description	Action	Priority	Duration
Bottom of Parking	Trap and slow the flow of water	Install rain garden/landscaping -See LakeWise	High	Initial install and ongoing maintenance
Island Access Road erosion	Sediment entering the lake	Follow guidelines from LWAP	High	Initial install and ongoing maintenance
Water diverted around beach into the lake	A French drain effective around beach but outflow too close to lake	Install rain garden/detention area to slow the flow of water- See LakeWise	High	Initial install and ongoing maintenance
Large areas of compacted mowed areas	Surface water is leading to erosion	Define pathways with edging and surface material, install infiltration steps-See LakeWise	High	Initial install and ongoing maintenance
Shoreline buffer missing	Stormwater, sediment and nutrients flow directly into lake	Install native plants to protect shoreline-See LakeWise	High	Initial install and ongoing pruning to maintain shape
Excessive Parking	Stormwater flow down to beach	Limit size, maintain water bars-See LakeWise	Medium	On-going
Sand from volleyball court eroding	Stabilize volleyball court	Improve retaining wall and enhance	Medium	Repair and install

	to prevent erosion	buffer -See LakeWise		
Roof runoff	Volume of water contributing to erosion	Install dripline trench-See LakeWise	Low	Initial install and ongoing maintenance
Shoreline buffer	Protect existing plants	Prune as needed	Low	Ongoing

Management Unit 3

Management Unit 3 consists of the causeway and island area. The topography is very flat, the soils are compacted and the duff layer has been largely removed by landscape clean-up crews. Much of the understory has been removed leaving an overstory of hemlock, pine and oak with some beech in the understory. Most of the snags and downed coarse woody debris have been removed. The canopy is open due to a large cleared area in the middle of the island.

The “island” area is a wonderful hemlock, pine and oak forest that is in danger of being *loved to death*. Currently the overstory trees provide shade but the forest floor and mid-story have been mostly removed in large areas. The first step to restoring the Island area is to determine appropriate use. The entire middle is cleared and compacted. What size groups gather here? Could the clearing be smaller and still be effective? The outhouses are redundant and may be scheduled for removal. This is an important step to protecting clean water in Lake Fairlee. The barbeque grills are old and outdated. Could they be rebuilt and carefully placed to concentrate visitors in a few areas. Instead of mowing a large area and removing the natural duff in an effort to “clean up”, define the areas with edging and limit clean up to areas where it is appropriate for people to gather.



Figure 19 Excessive cleared area and lack of duff layer in need of restoration on the island.

Designing the outdoor spaces will require planting appropriate native plants and a delineation between where people and the landscapers should be, and where nature should be allowed to grow. For example, there are several areas with rock outcrops that invite visitors to the water’s edge. Focus access to these naturally armored areas and install native plantings with low log or rock edging to keep people from trampling new plantings. Exploring the point of the island is a wonderful experience, but the path could be reduced to a narrow 3 ft winding track instead of the wide mowed area that heads in that direction now. Placement of the grill area near the causeway and the existing open area as well as some landscaped

picnic tables will help guide visitors to a central congregation area. Once a design is in place this could be a suitable project for a community group or Boy Scout to implement. This area is also discussed in the Lake Wise report included in Appendix 4.4.

Figure 20 Define pathways to access the water in appropriate locations instead of large cleared areas that are there now.



MU 3 ACTION ITEMS

Issue	Description	Action	Priority	Duration
Compacted shoreline soils	Trampled shrub layer	Define water access and plant native shrubs	High	Initial design and implementation
Latrines	Unsanitary and bad for water quality	Remove and redirect people to public bathrooms	High	Remove and cap
Excessive mowing and leaf blowing	No duff layer and unnecessary mowed areas	Communicate with landscapers to reduce mowing and removal of duff	High	Likely will have to be reminded over time
Invasive Species Removal	Honeysuckle is growing along the causeway	Pull and replant with natives if needed to stabilize the path	High	Monitor over time for new plants

Management Unit 4

Management Unit 4 includes the southern portion of the property. In context of the four management units, the northern portion is the most natural and abutting a large wetland, MU2 and

MU3 are heavily used recreation areas where most of the summer activity is focused, MU4 as an underutilized area where developing a more rustic recreational use may be appropriate. Determining the needs of the community and level of interest will guide the future development for this area.

MU4 is partially forested with a mix of white pine, oak, beech and birch and a healthy understory with a thick duff layer. The access road to MU3 defines the northern border of this Unit. Closer to Rt. 244 is an open area that is part meadow, clay tennis court and septic system. At the southern corner there is a gated access with a gravel apron allowing direct access to the meadow for mowing or maintenance. Most of the area is wooded and providing an excellent shoreline habitat. Adjacent to the causeway there is a large mowed area that was once used to launch boats. The cove is rather mucky and there may be better areas for boat launching. Determining if this area of shoreline could be reduced in size or abandoned to regrow would help trap stormwater that flows down the access road.

Figure 21 A large unused mowed area that allows sediment to enter the lake. Could this be replanted or reduced?



An overgrown trail begins near the basketball court, crosses over a drainage, winds through the woods and up over a rocky area into the meadow. This trail is well located away from the shoreline and passes through several interesting habitat types. There is a framed platform that could be covered to provide a natural classroom or picnic area.

The first part of the trail crosses a wet area where poison ivy is thriving. Although poison ivy is native, this may be an occasion where eradication is desirable. Hiring a licensed herbicide applicator to tackle the problem would likely be required as hand pulling by volunteers may be very difficult project to recruit volunteers for! The path itself is in good condition and in a short distance passes the platform mentioned earlier. The path

divides and a more gradual wider path continues up to the field or a narrower scramble takes visitors over the rock ledge into the field. The scramble section of the path is quite close to the southern boundary and may in fact cross onto abutting property. Marking the entire southern boundary would be advisable. Delineating the boundary with markers will help keep visitors on the property and help volunteers know where to direct their work.

The field and clay court close to Rt.244 offer interesting potential for activities. The clay court appears to be in acceptable condition if there was interest in restoring it to be fully functional as a tennis court. This would require a commitment from the Recreation Department but it is an interesting resource that could draw additional people to use the property. The meadow may also offer opportunities. It could be mowed on a more regular basis during the summer to provide a

space for special events, larger group gatherings or just a play area. Some of the edge area may be suitable for enrichment plantings with native wildflowers to attract pollinators and enhance the visual appeal of the area.

The forested area is providing an excellent natural habitat and shoreline protection. The emergent pines provide high perches and will offer cavity nesting sites in the future. There is an acceptable amount of coarse woody debris on the forest floor and the duff layer is a thick and effective sponge for absorbing and retaining water. Removing the individual invasive honeysuckle should be a top priority to protect the health of the forest and allow the native species to thrive.

Figure 22 Open meadow area and tennis court close to the road with potential for additional uses.



As the path is cleared or the edge of the meadow is maintained there may be an opportunity to create brush piles for additional wildlife habitat. There is an art to building a brush pile to attract small mammals and birds. The Connecticut Department of Energy and Environmental Protection has detailed information about construction ([Brush Pile Fact Sheet](#)). Several smaller piles are better than one large pile to provide numerous areas for shelter. In the winter, various small animals will use brush piles to find sufficient warmth and cover. These smaller animals in turn, attract predators such as foxes, fishers, and long-tailed weasels. Birds are also attracted to brush piles including sparrows, yellowthroat warbler, and a variety of wrens, including house, winter, or Carolina wrens. Brush piles are a great way to recycle nutrients, provide habitat and in the winter, the tracks in the snow can reveal a lot about how they are being used.

MU4 ACTION ITEMS

Issue	Description	Action	Priority	Duration
Invasive Species Removal	Honeysuckle is growing in small areas	Hand pull	High	Monitor over time for new plants
Vision for use: tennis, fields, classroom	Lots of options that need to be prioritized	Have Committee determine best uses	High	Initial agreement
Boat launch	Sediment is entering the lake	Agree to re-plant or reduce size	High	Planting
Southern boundary	Delineate the boundary	Mark with signs or paint	High	Initial marking and follow up over time

Poison ivy	Poison ivy along the trail	Contract with licensed applicator to eradicate	Medium	Likely will have to be repeated over time
Habitat Enhancement	Allow the forest to be messy	Construct brush piles, allow fallen trees to remain in place	Medium	As appropriate over time
Habitat Enhancement	Enrichment planting near the meadow	Plant pollinator-friendly plants in the sunny open area	Low	As appropriate over time

Considerations for the Entire Property

Treasure Island is a fantastic resource for the community. Investing in its upkeep and enhancement projects will help encourage a new generation of users. Swimming lessons attract numerous families to the lake, but additional amenities and periodic activities such as the story hour, journaling and special events encourage visitors to stay. Other ideas such as festivals or concerts have the potential to attract different members of the community. The recent pickleball tournament was a huge success that brought yet a different category of users. Encouraging birdwatching through events like the Christmas Bird Count or special walks, promoting iNaturalist as a way to document species and compare notes about species that are found on the property appeal to many people. Letterbox or geocaches are a popular type of treasure hunt that draw people to explore new trails or sections of the property. When visitors have enjoyable experiences on the property and see the commitment and upgrades, they will be more likely to return which will benefit everyone.

The true challenge will be balancing the ecological need for clean water and a healthy lake with human use of the property. By identifying Management Units that have different focus areas we can begin to balance competing uses for the property. With careful planning many of the activities that will benefit the lakeshore also improve the aesthetics of the property and enhance the user experience. When members of the community feel welcome and enjoy their experience at Treasure Island, they will be more likely to feel committed to its success, protection and future.

4.0 Appendix