Public Benefit Conveyances

Properties conveyed to the Town of Brunswick from Brunswick Naval Air Station (BNAS)

RECREATION, TRAILS & OPEN SPACE MANAGEMENT PLAN

Town of Brunswick, Maine
Adopted by the Brunswick Town Council
June 17, 2013

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Executive Summary

The Recreation, Trails and Open Space Management Plan document shall guide the management of the Town of Brunswick public benefit conveyance lands, public access and open space properties for the purposes of recreation, trails and open space conservation. The properties within this management plan include land acquired by / conveyed to the Town as surplus federal property following the closure of the Brunswick Naval Air Station (BNAS). In assuming responsibility for the conveyance lands, the Town is responsible for the establishment of management plans and the stewardship for each of the parcels formerly associated with BNAS.

A stakeholders group was established by the Town Council in 2011, including representatives from community and environmental organizations, health care providers, the Town of Brunswick staff, council, and committees, in addition to the Midcoast Regional Redevelopment Authority (MRRA) and Bowdoin College, which are also in receipt of BNAS surplus properties. The Town of Brunswick, Bowdoin College, and MRRA were all also involved in the development of the BNAS Reuse Master Plan. With the common interest of ensuring the appropriate use and management of the former BNAS properties, the Brunswick Town Council charged the group to recommend a set of management plans with an emphasis on recreation and conservation of natural and cultural/historic resources.

Within this management plan, several parcels have been inventoried and assessed individually to determine an appropriate level of use, access, and recreational opportunities, as well as the appropriate protection of ecological and cultural resources. The public benefit conveyance lands together offer a range of experiences and community benefits. This management plan seeks to both maximize the community benefits and protect important resources through the establishment of the overarching management goals and the management plans for the individual parcels.

Cultural and Historic Context. The former BNAS properties have a cultural history that pre-dates the establishment of the naval facility during WWII. Dating back to early native inhabitants, archaeological evidence indicates the land was used as hunting and gathering grounds. Early European settlement records indicate the establishment of four homesteads by 1739, with evidence of the later development supporting small mills, marine clay harvesting, and other natural resource based activities, and some civic uses.

Ecological Context. The natural and ecological values of the former BNAS properties are quite significant, despite what might be thought of as intensive use over the past 70 years. At the landscape level, the land is part of a significant block of unfragmented forest, and features the stream system and tidal marshes of Mere Brook as a significant ecological feature. The predominantly silt and fine sand soils over marine clay support a range of vegetation types and

natural communities in the unbuilt areas of the property, dominated by Oak-Pine Forest. The Lowbush Blueberry Sandplain Grasslands is the most notable natural community (including the East Brunswick Transmitter Site), which is listed as critically imperiled in Maine. Other notable natural communities include remnants of the Pitch Pine Heath Barren forest community type (critically imperiled), and areas of the rare Freshwater Tidal Marsh.

The properties also support a number of rare, threatened, or endangered plant and animal species, as well as some state-identified, high value wildlife habitats, including waterfowl and wading bird habitats and deer wintering areas.

Overall, the management and stewardship of the conveyance lands must have a significant focus on protecting the high value natural communities and plant and animal species, and must also be sensitive to known cultural and historic resources. The development of recreational and trails uses will continue to be strongly influenced by the overall management goals of protecting cultural and natural resources.

Kate Furbish Preserve

The recreational use for the Kate Furbish Preserve, the largest of the Town's open space properties from the conveyance, has been determined to be primarily passive, including a system of walking and shared-use trails; winter use for non-motorized recreation; access for hunting, fishing, clamming, etc.; opportunities for educational interpretive signage or amenities; and modest parking to serve trailheads. These uses will provide tremendous community benefit, while balancing the need for protecting significant ecological and cultural values. The Kate Furbish Preserve is not intended for motorized vehicles other than for emergency or maintenance purposes. No camping will be permitted within the Preserve. Hours of operation are to be open one hour before dawn until a half hour after dusk. Much of the chain link fencing will be removed over time, to improve wildlife habitat connectivity and in some cases trail connectivity.

Perimeter Trail System

A conceptual plan has been developed to create a trail around the perimeter of the entire contiguous land of the former BNAS property. This trail would be developed on Town of Brunswick, Bowdoin College, and MRRA properties, created using both some of the existing perimeter road from the former BNAS facilities and new trail segments. The perimeter trail would connect to the trail system of the Kate Furbish Preserve at the southern end, and in the long term could have connections to other trails in the area such as the Androscoggin Bike Path and the Town Commons trails on Harpswell Road. Trails must be developed in phases, with cooperation from the three major property owners and other neighborhood abutters.

Introduction

Any publicly-owned property will serve the needs and interests of the public best if it is managed according to a clear plan. A management plan inventories the ecological, historical, and recreational resources of a property and specifically states the purposes and goals for the management of the land, followed by a series of activities that will take place in order to meet those objectives. In essence, the management plan is a road map to guide the management of the property.

Acquisition History

On August 24, 2005, the Federal Base Realignment and Closure (BRAC) Commission voted eight to one to close Naval Air Station Brunswick and move its aircraft operations to Jacksonville, Florida. On September 15, 2005, the final list was approved by the President. Shortly after this action to close the Brunswick Naval Air Station, Maine's then Governor John E. Baldacci, the local legislative delegation and the Brunswick Town Council established the Brunswick Local Reuse Authority (BLRA). The BLRA was formally recognized by the Department of Defense on December 1, 2005.

One of the responsibilities of the BLRA included the establishment of a State and Local Screening Committee whose mission was to provide information, analysis and recommendations to assist the full BLRA in its deliberation on the development and implementation of the "state and local screening" process in accordance with the Federal Base Closure Community Redevelopment and State and Local Assistance Act.

In June 2006 the BLRA Board distributed its State and Local Screening Notice of Interest which served as the precursor to the Town of Brunswick placing its notice of interest and application dated May 14, 2007 for approximately 1,356 acres of recreation / conservation land including three recreation buildings (29, 211 and 583). On July 5, 2007 the BLRA's State and Local Screening Committee voted to approve certain public benefit conveyances to the Town. The "*Town of Brunswick Application to Acquire Surplus Federal Property at the Brunswick Naval Air Station, Brunswick, Maine, U.S. Department of the Interior, National Park Service",* dated November 21, 2007 contains details relative to all parcels of property and buildings requested by the Town and the corresponding actions of the BLRA State and Local Screening Committee relative to each request.

Conveyance Process

According to the Department of Defense Base Redevelopment Manual, 2006, a public benefit conveyance (PBC) is defined as "the transfer of surplus military property for a specified public purpose at up to 100 percent discount". Surplus military property may be conveyed to public agencies or not-for-profit organizations to provide public goods and services. PBC categories include among others, parks and recreation and conservation. Under these two PBC categories, the Town of Brunswick applied for consideration to the BLRA via its State and Local Screening Process for acquisition of the lands represented in this management plan. In the case of the various lands requested by the Town and covered in this plan, the U.S Department of the Interior acted as the sponsoring federal agency whose job it was to determine applicant eligibility and need.

Prior to conveyance of the lands represented in this plan, the U.S. Navy was required to complete a Findings of Suitability to Transfer (FOST) process for each parcel to document that the property is environmentally suitable for transfer by deed under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Department of Defense (DOD) FOST Guidance.

The next stage, once lands become approved for conveyance by the U.S. Navy, the U.S. Department of the Interior begins the process of preparing deeds for review and consideration by the Town of Brunswick so the conveyance can take place. While the deeds are being prepared the Interior Department and Town execute an interim agreement entitled "Acceptance of Constructive Possession for Surplus Federal Property at the Naval Air Station Brunswick". This agreement places all obligations and liabilities of ownership for the property with the Town and reflects that it will assume responsibility for the care and handling of, all risks of loss or damage to the properties being conveyed. To date the Town has agreed to these terms for Parcels REC-1, REC-2, REC-3, REC-4, REC-5 and REC-7 and awaits the final delivery of the corresponding deeds. The Maine Historic Preservation Commission holds a covenant concerning archaeological site protection. The Town previously received the deed for the former Navy Transmitter site in 2012. Together the total acreage of these parcels is approximately 805.24 acres.

Other parcels are anticipated for conveyance to the Town at a subsequent date once they are deemed appropriate for transfer. These parcels are identified as REC-6, REC-8, REC-9, REC 10, REC 11, REC 12, REC-13 and REC-14.

Individual management plans for each of these parcels will be developed over time and added to this overall property management plan.

Outdoor Recreational Resources in the Region

Hiking, Walking, and Water Trails

The region boasts a number of shared use paths as well as natural trails and water trails.

The Androscoggin River Bicycle Path in Brunswick, Androscoggin Riverwalk in Brunswick / Topsham, Papermill, and Androscoggin Trails in Lisbon offer some of the area's best known shared use paths.

Natural trails include those in Brunswick located at Cox Pinnacle, the Town Commons, Crystal Spring Farm and the Captain Alfred Skolfield Nature Preserve. Located in Harpswell is the Skolfield Shores Preserve. Other natural trails in the region include the Whiskeag Trail in Bath, the Cathance River Heritage Trail, Cathance River Nature Preserve and Bradley Pond Trails in Topsham, and the Summer Street Park-Little River and Beaver Park Trails in Lisbon.

For those wishing to spend a day on the water in kayak or canoe the following water trails offer area residents a variety of options; the Cathance River: Bowdoinham to Head of Tide, Cathance River: at the Cathance River Preserve in Topsham, the Androscoggin River: Lisbon to Brunswick and Merrymeeting Bay.

Cross-country Skiing

Groomed cross-country ski trails are maintained at Crystal Spring Farm in Brunswick, and the Brunswick Town Commons.

Mountain Biking

Hedgehog Mountain in Freeport allows mountain biking on designated trails. Mountain bikes also utilize trails in the College to Commons trail system in Brunswick. Given the highly erodible Presumpscot formation soils on this property, any future mountain biking trails should be designed specifically for this use and in a manner that limits potential for channelized drainage, surface scour and erosion to coastal wetlands.

Water Access

Significant opportunities for public water access are available at most major water bodies in the region. Access opportunities include Winslow Park (Casco Bay), Porter's Landing and Mast Landing (Harraseeket River) in Freeport; Wharton Point (Maquoit Bay), Mere Point (Middle Bay), Simpson's Point (Middle Bay), Barne's Landing (Middle Bay), Gurnet Landing (Long Reach), Sawyer Park (New Meadows River), Pejepscot Dam Recreation Area (Androscoggin River), Water Street Landing (Androscoggin River), Mill Street Canoe Portage (Androscoggin River), and Bay Bridge Landing (Merrymeeting Bay) in Brunswick; Lookout Point (Middle Bay), Basin Point (Casco Bay), Potts Point (Casco Bay), Stover Point (Harpswell Sound), Ewing Narrows (Harpswell Sound), Bailey Island (Casco Bay), Orr's Cove (Casco Bay), Bethel Point (Quohog Bay), and Cundy's Harbor (New Meadows River)in Harpswell; Sabino (New Meadows River)and Bull Rock Landing (New Meadows River)in West Bath; and Head of Tide Park (Cathance River) in Topsham.

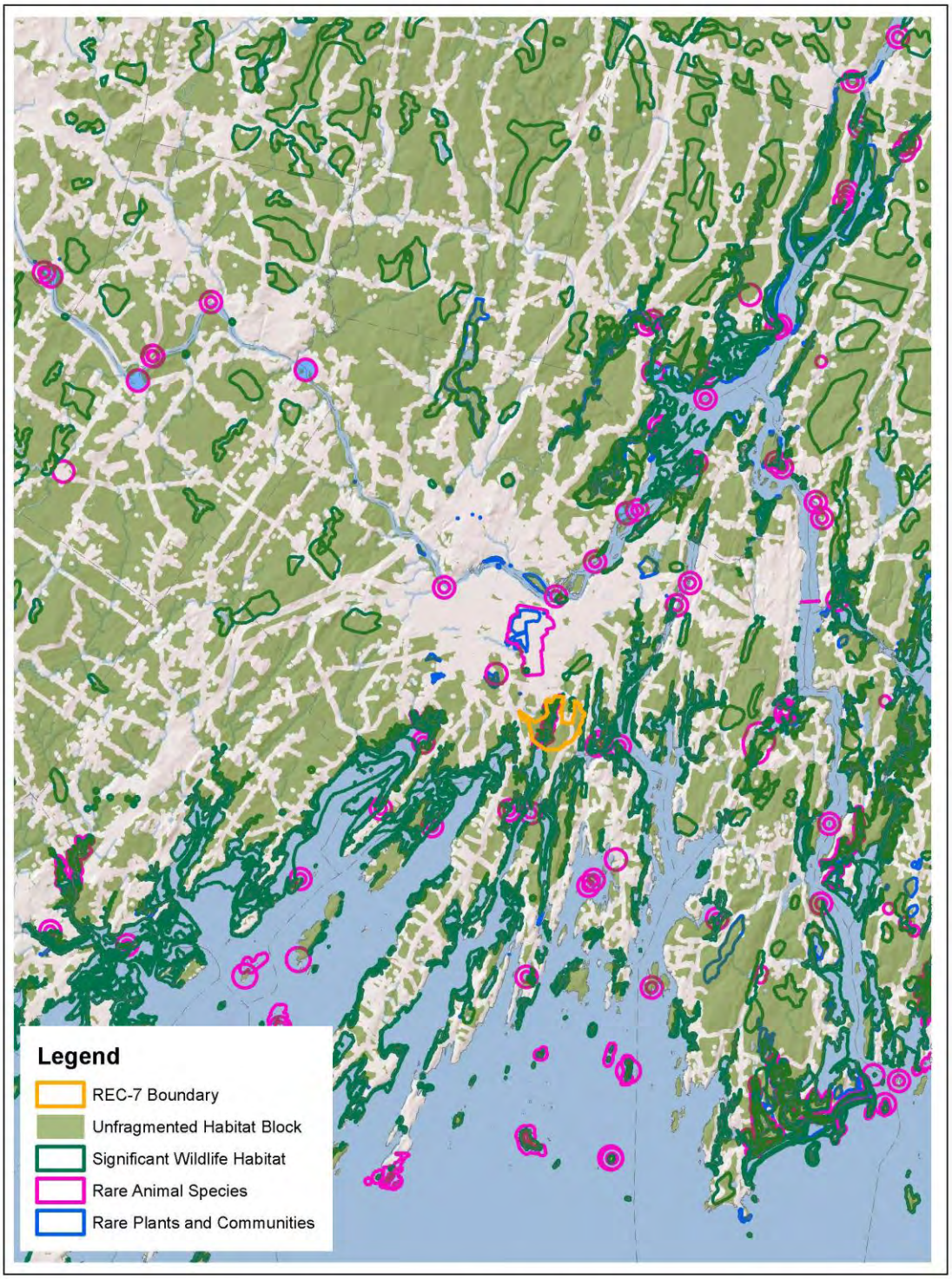
Currently, access to Harpswell Cove is limited to the Ewing Narrows access site in Harpswell located approximately 2.5 miles south of the Kate Furbish Preserve (former REC-7) site. The Kate Furbish Preserve parcel offers a significant opportunity for hand carry access to upper Harpswell Cove from the former bunkers. Significant coastal wetlands limit development of formal access facilities elsewhere on the property.

Hunting, Fishing and Wildlife Watching

The Greater Brunswick Region which includes Freeport, Brunswick, Topsham, Harpswell, and West Bath is the second highest population center on Casco Bay after the Greater Portland Region. In 2012 this region included approximately 5400 licensed hunters and anglers. Additionally the region is known to be home to hundreds of recreational bird watchers and other non-consumptive wildlife enthusiasts. Hunters and inland anglers in the region are largely dependent on private land owners for access. In large part, recreational birding and other forms of wildlife viewing beyond casual backyard observations are dependent on public parks and private preserves that allow public access. Key publicly accessible properties in the region that allow either hunting, angling, or both include the Town of Freeport's Florida Lake Park, Hedgehog Mountain Park, and Hidden Pond Preserve; the Town of Brunswick's Pejepscot Dam Recreation Area (fishing only), Maquoit Bay Conservation Land, and Coffin Ice Pond (fishing only); Brunswick-Topsham Land Trust's Crystal Spring Farm North (by permission only); and Maine Department of Inland Fisheries and Wildlife's Merrymeeting Bay Wildlife Management Area on the Muddy River in Topsham and Gamble Marsh property on Maquoit Bay in Brunswick.

Publicly accessible areas of primary interest to birders and other non-consumptive wildlife enthusiasts include Wolfe's Neck State Park, Winslow Park, Florida Lake Park, Hedgehog Mountain Park, and Hidden Pond Preserve in Freeport; Maquoit Bay Conservation Land, Cox Pinnacle, the Town Commons, Wharton Point, Androscoggin River Trail, Sawyer Park, and Bay Bridge Landing Wetland Park in Brunswick; Maine Audubon's Hamilton Sanctuary in West Bath; Brunswick-Topsham Land Trust properties including Crystal Spring Farm (Brunswick), and Bradley Pond Preserve (Topsham).

The subject conveyance properties have significant potential for enhancing both consumptive and non-consumptive wildlife pursuits within the greater Brunswick region. Kate Furbish Preserve has the potential to provide notable waterfowl and woodland hunting experiences in close proximity to a major population center and the potential to become a prime birding location. The East Brunswick Transmitter site will offer significant early successional/grassland habitat birding opportunities currently limited in the region.

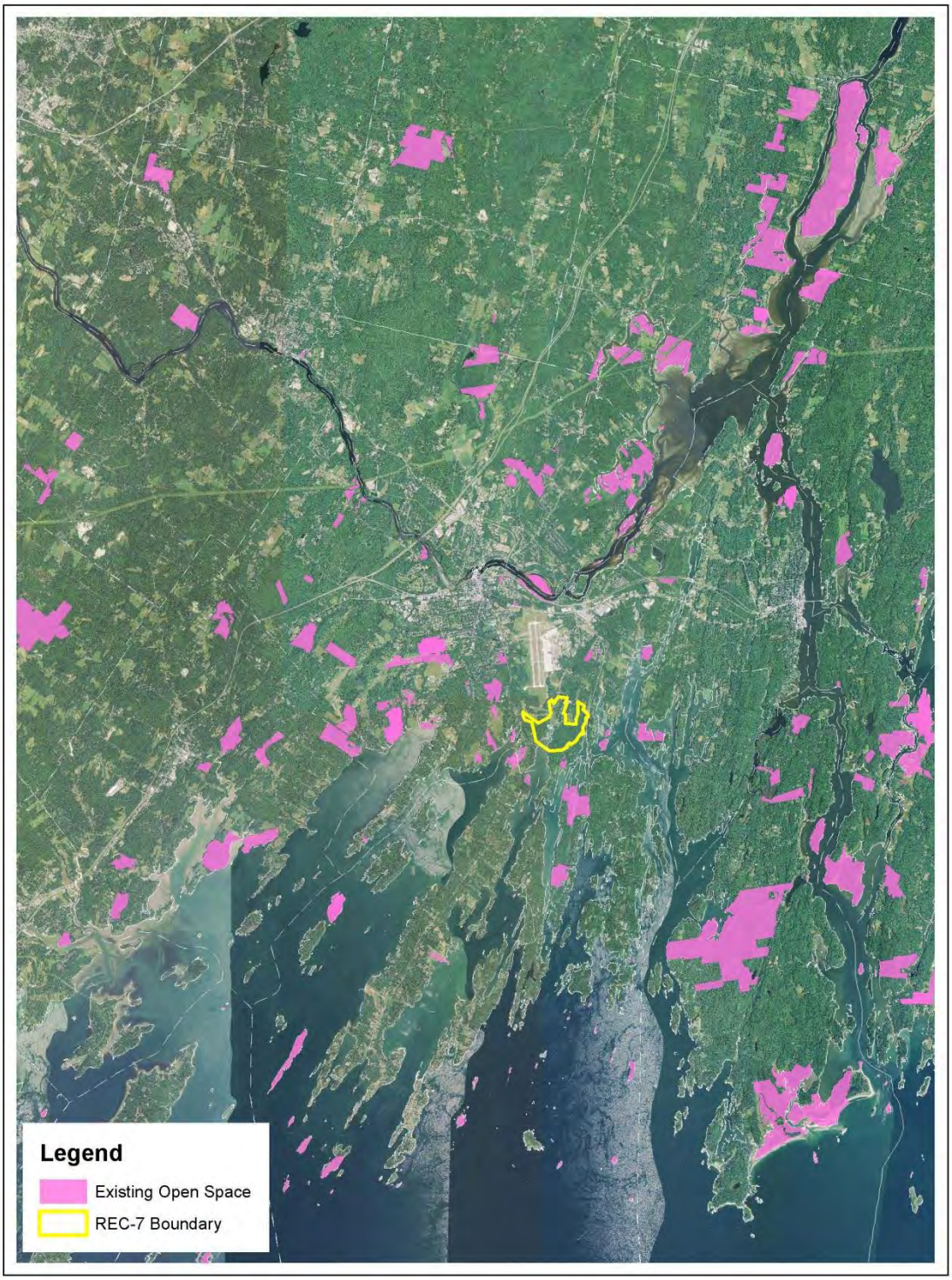


Important Natural Resources in Greater Brunswick Region

Other Conservation Land in the Region

The Towns of Freeport, Brunswick, Harpswell, and Topsham have each completed local open space plans identifying local conservation priorities. Each town has made headway in protecting lands for public access. Land trusts in the region which include Freeport Conservation Trust, Brunswick-Topsham Land Trust, Harpswell Heritage Trust, and the Kennebec Estuary Land Trust have each protected significant acreage by working collaboratively with private landowners. The State of Maine and federal government have also contributed significantly to the portfolio of conserved lands within the greater Brunswick area. Maine Department of Inland Fisheries and Wildlife easements and wildlife management area lands are a significant percentage of protected lands in the region, and US Fish and Wildlife Service and National Oceanic and Atmospheric Administration funds have helped to complete significant conservation projects on Maquoit and Merrymeeting Bays.

Each of the conveyance parcels will contribute significantly to the regional conservation land portfolio and enhance long-term ecological functions, water quality protections and recreational opportunities in the region.



Open Space within Greater Brunswick Region

Overarching Goals and Management Principles

Purpose of the Management Plan

The primary purpose of the Recreation, Trails and Open Space Management Plan is to guide the management of the Town of Brunswick public benefit conveyance lands in a manner that protects the natural and cultural resources in perpetuity and provides passive recreational and educational opportunities. Ecosystem value, traditional land use and stakeholder concerns have been considered.

Management Goals

Management goals for the Town of Brunswick public benefit conveyance lands are to:

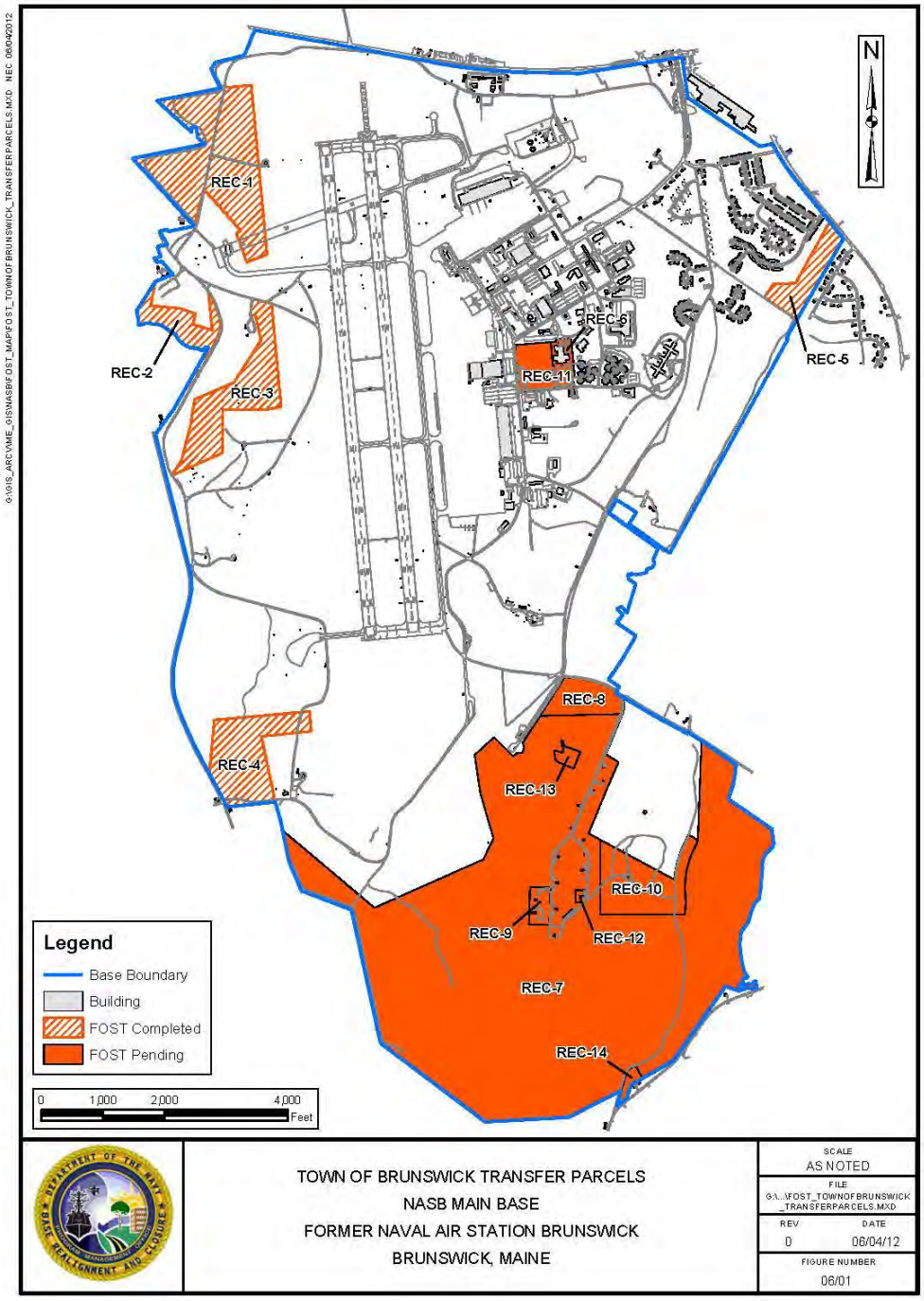
- Manage and conserve the natural resources of the Town of Brunswick public benefit conveyance lands in perpetuity;
- Manage and conserve the cultural and historic resources of Town of Brunswick public benefit conveyance lands in perpetuity; and
- Provide and manage recreational use on the property to enhance the quality of life in the Greater Brunswick area.

Management and Stewardship Vision for the BNAS Conveyances

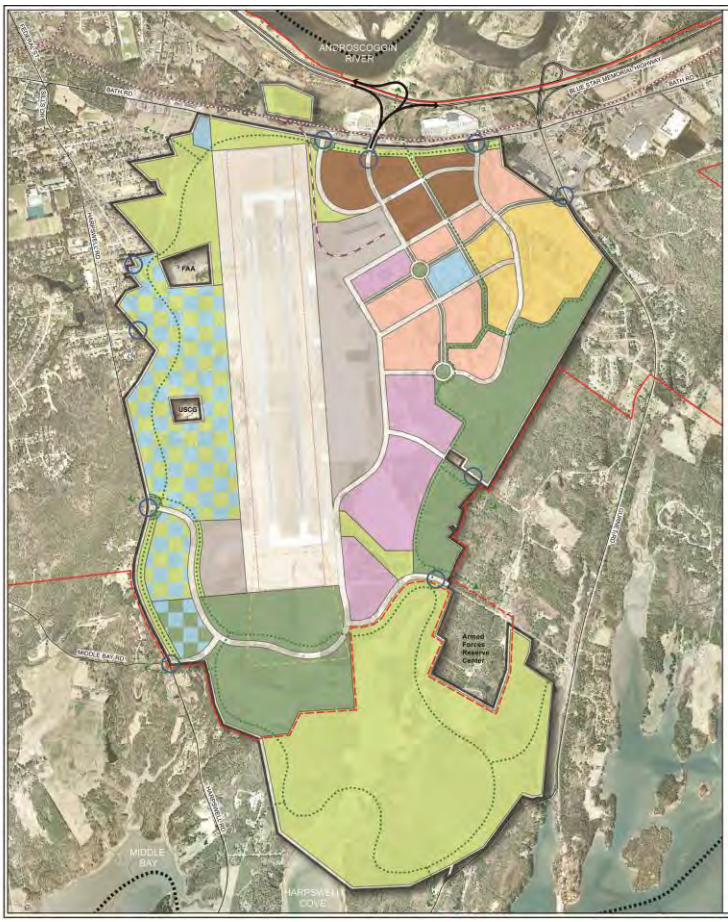
The overarching vision of this plan is that the Town of Brunswick public benefit conveyance lands will be a cherished local and regional asset where people can reap the rewards of permanently conserved, well-managed outdoor areas that provide a range of experiences. These lands will serve ecological, recreational, and community functions that enhance the quality of life for local residents and visitors alike. Management activities will be guided by the broad goal of helping retain and celebrate the natural and cultural character of the plan area. Management activities will be shaped by the knowledge that these properties play a vital role in regional habitat functioning and provide extensive outdoor recreational opportunities. Management decisions and activities will seek to minimize environmental impacts, improve wildlife habitat and provide ample and varied public access and outdoor recreational opportunities.

Overview of Lands Included in Plan

Property Map of public benefit conveyance properties (6/4/2012)



BNAS Master Reuse Plan



Proposed Land Use Program

	LAND USE DISTRICTS	SURPLUS ACRES	PERCENT OF TOTAL
Land Development	Airport Operations	500	16%
	Aviation-Related Business	230	7%
	Professional Office	120	4%
	Community Mixed Use	175	5%
	Business and Technology Industries	190	6%
	Education	200	6%
	Residential	215	7%
	SUBTOTAL	1,630	51%
Open Space	Recreation / Open Space	510	16%
	Natural Areas	1,060	33%
	SUBTOTAL	1,570	49%
	GRAND TOTAL	3,200	100%

Notes:

1. Checkered blue-light green area totals 320 acres, of which an undefined 175 acres have been assigned in the table above to Education and 145 acres to Natural Areas.
2. Checkered blue-dark green area totals 30 acres, all of which has been assigned in the table above to Recreation / Open Space; however, Education would be an allowed use, if needed.
3. Checkered light green-dark green (East Brunswick Transmitter Site) area totals 70 acres, of which an undefined 35 acres have been assigned in the table above to Recreation / Open Space and 35 acres to Natural Areas.
4. The Runway Object Free Area provides a 500-foot buffer to the east and west of the two runways. The Airport Operations land use district extends an additional 500 feet beyond the Runway Object Free Area, resulting in a 1,000-foot buffer parallel to the runways.

The BNAS Reuse Plan was a culmination of four years of intense study and collaboration regarding the eventual redevelopment of the Brunswick Naval Air Station. In 2006, the Brunswick Local Redevelopment Authority (BLRA) selected a consulting firm to prepare the reuse master plan. The 18-month planning study followed a 3-phased process that included the formulation and implementation of a public engagement program and the homeless state and local screening program; inventory and analysis of physical, market, economic and facility data; and the formulation of conceptual master plans. Nine planning areas were identified with recommendations for two different conceptual scenarios – non-airport and airport based. In August 2007, the airport-based scenario, Plan Alternative "A" above was selected. The Reuse Master Plan was later accepted by the Brunswick Town Council.

Relationship to the Brunswick Comprehensive Plan and Zoning Ordinance

The 2008 Update of the Brunswick Comprehensive Plan incorporates the former Brunswick Naval Air Station property as one of nine planning areas within the Town's designated growth area. In summary, the reuse of the BNAS planning area will:

- Be guided by the community-influenced and accepted reuse master plan of mixed community uses, an airport with supporting businesses, facilities and lands for recreation, conservation, and natural areas / habitat preservation. Redevelopment will promote a strong sense of place and return connectivity to abutting neighborhoods, commercial areas, and natural areas, including the Town Commons.
- Allow redevelopment within the growth area to develop into a mixed use planning community. Those lands located outside the growth area, namely the Kate Furbish Preserve (former REC-7) shall remain as conservation areas.
- Provide for flexible development standards consistent with smart growth guiding principles and the stated goals of the Comprehensive Plan Update. With regard to the Kate Furbish Preserve, buffering of natural areas and habitats as identified in the approved Environmental Impact Statement for BNAS shall be required.

Zoning Ordinance amendments based on the guiding principles of the Comprehensive Plan and Reuse Master Plan were drafted by a committee representing the Town, MRRA and Bowdoin with assistance from a planning consultant. Three zoning districts were developed:

- BNAS Reuse District providing for the reuse and redevelopment of the area designated for development and active use in the Reuse Master Plan. The District is further divided into 6 land use sub-districts reflecting the intent of the master plan.
- BNAS Conservation District providing for the preservation, maintenance and enhancement of existing natural areas in the northwest (REC-1) and southeast (Kate Furnish Preserve – former REC-7) areas of the former BNAS.
- College Use/Town Conservation District providing for reuse and redevelopment of the west side of the former BNAS with the developable lands conveyed to Bowdoin College and the remaining area conveyed to the Town for the purpose of preserving, maintaining and enhancing the existing natural areas, in accordance with the standards of the BNAS Conservation District.

BNAS Conservation District permitted uses and development standards applicable to Kate Furbish Preserve (former REC-7) as well as the west side conveyances to the Town (REC-1, REC-2, REC-3, REC-4) are consistent with the intent of the Public Benefit Conveyances and the Reuse Master Plan and include non-intensive recreational uses, hiking and pedestrian trails, forest and wildlife management, soil and water conservation and buildings/parking accessory to related uses. Development standards for buildings and structures limit the area of project disturbance to no more than 2,500 square feet and are designed to minimize their impact on the natural environment.

Cultural & Historical Significance

History of the Land: Naval Air Station Brunswick

In the recent past the town of Brunswick's legacy has been greatly defined by a military relationship. Naval Air Station Brunswick (NASB) indelibly shaped the community through the second half of the Twentieth Century, occupying large tracts of land, relocating military families to town, and conducting extensive air operations. Three parcels of land, NASB, McKeen Street Housing Annex, and East Brunswick Radio Transmitter Site, totaling nearly 3,300 acres, were dedicated to military functions. The rapid growth of the base required extensive relocation of homes, businesses, roads, and people thereby altering long established communities.

Neighborhoods have been described as geographic clusters that form a town, bound both politically and territorially. Yet, each possesses unique heritages and distinctive social bonds. From 1740 until the middle of the 20th century, the area grew into the hub of an important community that stretched from the shores of Gurnet to Middle Bay. Today, the area rests under a forested carpet. Brunswick's Middle Bay / Merriconeag district served as a functioning rural community as well as a vital transit region for two towns.

Evidence suggests that prior to European settlement, early native people infrequently inhabited the area that was later occupied by this community. There is little indication of prehistoric human activity within the shore lands abutting the marshes of what later became the Middle Bay/Merriconeag community. Archaeological surveys have found limited traces of debris from stone tool making process. It is likely that the use of the area by indigenous people was limited to hunting and other food gathering activities.

The first English to inhabit the Pejepscot region started to arrive in 1628, settling along river and coastal shorelines. A 1739 map indicates that there were four homesteads around the marshland at the head of Harpswell Cove, three of them on Princes Point. This is the earliest record indicating European habitation of the land later occupied by NASB.

Despite thin soils, a vibrant agriculture community slowly developed around the headwaters of Harpswell Cove and the shore lands that abut the salt marsh bisecting the area. A web of streams emanating from springs provided farms with an ample supply of fresh water year round. Spartina from the marshes nourished livestock. The relative level topography of the area made tilling the land manageable.

The community that developed over the next two hundred years grew to support two rural one-room schoolhouses, a grange, a church, and cemeteries. In addition, a dam site on Mere Brook generated power for grist, saw, and woolen carding mills. Active commerce continued into the 1930's, as a brickyard operated on the shore of the marsh where workers dug marine clay and maintained the kilns, producing bricks for construction of buildings in town.

The Middle Bay/Merriconeag area also served as a critical transit zone. To pass from the heart of Brunswick to the Harpswell Islands, the Gurnet Road cut through the center of the community. Because West Harpswell and Harpswell Islands are noncontiguous, the shortest overland route was to travel the Merriconeag and the Gurnet Road that passed through this agricultural setting.

To the north a municipal airport was opened in 1930 on level barren lands. The little facility did not encroach on the Middle Bay/Merriconeag community. The airstrip was pressed into military use during World War II. Planes shepherding naval supply convoys headed to Europe were based in Brunswick. Full military control of the base was assumed in 1943 when the station was expanded to train Canadian and British pilots. At war's end the military deactivated its operations. From 1946 to 1951 an independent contractor managed the airport.

A reversal of priorities brought the military back to Brunswick. The Navy selected the air station for upgrades in order to accommodate the largest aircraft of the time. This meant extending the runways to the south and into the Middle Bay/Merriconeag community. The timing for this expansion was opportune.

By the middle of the 20th century, an increasing mobile population and a national trend towards urbanization left farms throughout Maine and the country in the midst of a great change that resulted in family farms being replaced by large agribusinesses. The hardscrabble agriculture that could be managed within the Middle Bay/Merriconeag community became less viable.

During the height of military expansion, from 1952-53, this was a community in decline. From the beginning of the 19th century, a drop in local agriculture steadily eroded the traditional economic reliance on farming of families living in the Merriconeag/ Middle Bay community. As increasing acres of fields lay fallow, farmsteads turned to homesteads and a growing number of residents turned from earning an income from their land taking jobs in shoe factories, Bath Ironworks, or shops in town.

Any public opposition to military acquisition of the land was belayed by Cold War politics. Fear of a growing communist threat that was spurred on by a Red Scare, McCarthyism, and the Rosenberg Trial convinced townspeople that sacrificing land for the security of a naval air station was a necessary decision.

Throughout the first military occupation of the base (1943-1946), a number of aircraft accidents occurred as pilots were being trained. During World War II a plane destroyed a house at the corner of the Merriconeag and Middle Bay Roads. It was rebuilt and nearly hit again when a P2V Neptune aircraft crashed in 1952. The Navy indicated that the 8,000-foot runways might be extended to 10,000 feet and thereby required a greater encroachment on the lands at the head of Harpswell Cove. With concerns for public safety, issues of national security, and the power of eminent domain in the hands of the federal government, the area was purchased and private structures were torn down or moved. Roads were closed; fences were erected.

Many of the displaced families relocated to other parts of the Brunswick. The Gurnet Road (Route 24), from in town Brunswick to Harpswell Islands, was replaced by a new road from Cook's Corner. Residents of Harpswell had to travel to downtown Brunswick (then Cook's Corner) and finally the new Route 24 to get from one part of their town to the other.

During the Navy's tenure, changes to the land included the construction of a security perimeter road along the eastern and western fence. A survival school was located on the shoreline of the marsh. Other projects included building a munitions storage complex, installing a radar tower, and creating a golf course. The most intrusive military project was a pipeline that ran through the area, bringing aviation fuel from a deep water depot in Harpswell to the base. Beyond these undertakings, the area was left to evolve under a process of natural selection. Forest replaced fields. Sites where barns and homesteads stood were lost to an undergrowth of vegetation. Abandoned roads faded to paths before disappearing altogether. Today there is little evidence of the vibrant community that stood for nearly three hundred years and provided a vital connection between Brunswick and the two Harpswells.

Recommendations:

A) Exchange archaeological site information with the Maine Historic Preservation Commission to ensure that both the Town of Brunswick and the Commission have complete lists of the archaeological sites and their locations.

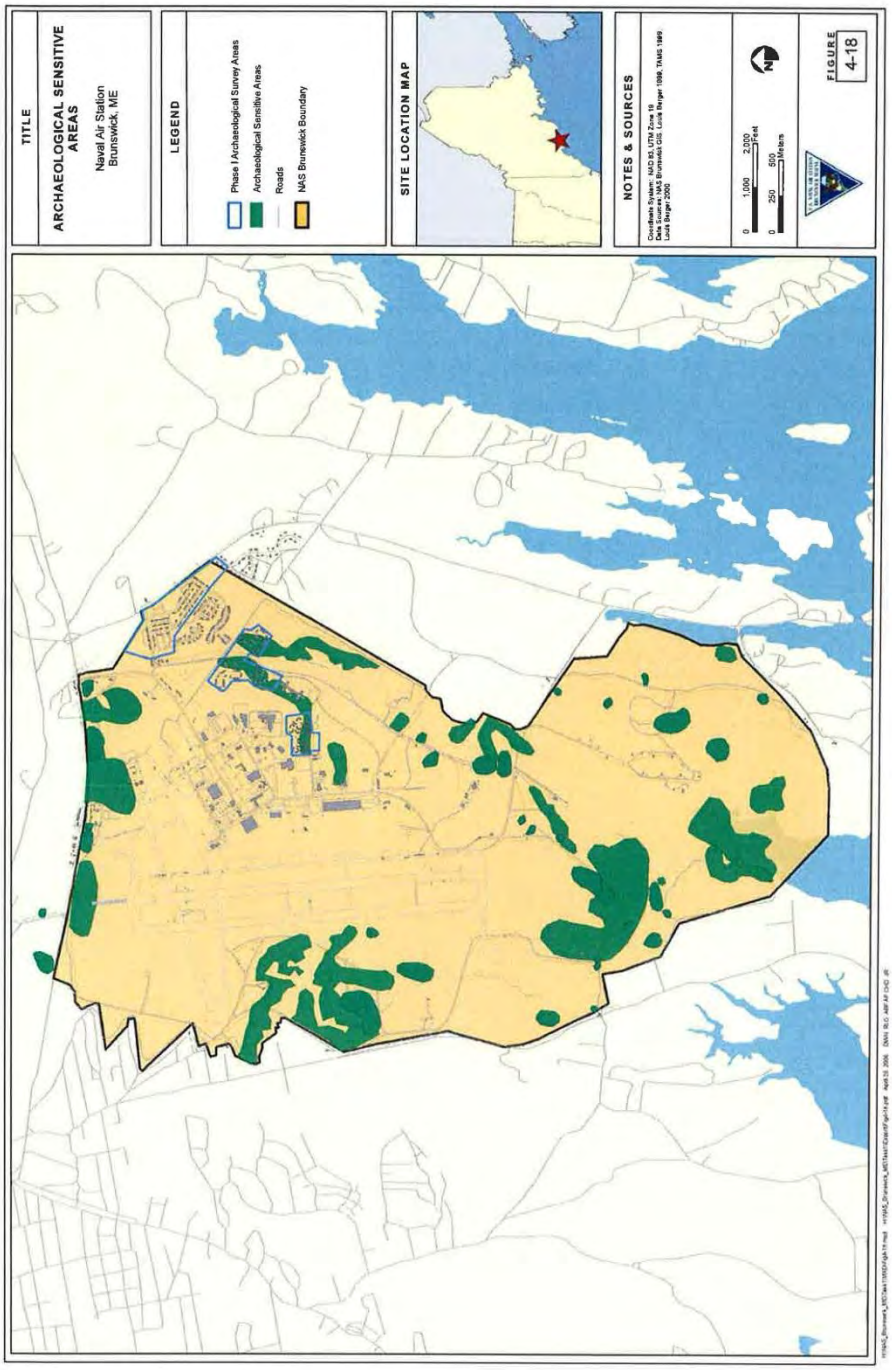
B) Develop protocols and procedures for any future ground disturbance within the boundaries of the public benefit conveyance land.

C) Encourage the Brunswick Town Council to research and potentially establish an ordinance restricting ground disturbance within the boundaries of the public benefit conveyance land.

D) Consider creating a Historic Overlay District on the proposed preserve using Maine Historic Preservation Guidelines.

E) Proceed in cooperation with the Maine Historic Preservation Commission, with a Multiple Properties Heritage District.

Archeological Sensitive Areas Map



Natural and Ecological Resources

Geological Setting

Much of the land formerly occupied by the Naval Air Station Brunswick, including the former East Brunswick Transmitter Site, is located on a regressive marine delta formed during the Pleistocene era as glacial melt carried coarse sands southward, roughly aligned with the orientation of the Kennebec River and Maquoit Bay. During this period the land was rebounding as the glaciers retreated. Correspondingly, soils in the area today are dominated by silts and fine sands often over marine clays. Dominant soil types include Belgrade, Hollis, and Swanton fine sandy loams; and Buxton, Gouldsboro, and Lamoine silt loams. These soil conditions determine the naturally occurring vegetative communities present today. Deep coarse sand deposits are relatively rare in the northeast, and correspondingly, so are some of the natural vegetative communities that they support.

Natural Communities

The Naval Air Station Brunswick and its outlying facilities are located in the Central Maine Coastal and Interior Eco-region as designated by the Maine Natural Areas Program. The eco-region comprises a glacially scoured and dissected low-relief plain that slopes toward the coast and exhibits glacial associated features such as sandy plains, eskers, and terraces. The topography throughout the eco-region is generally flat to gently rolling, with elevations ranging from sea level to 1,000 feet above mean sea level (AMSL). The elevation of the airfield at Brunswick Landing is approximately 75 feet above mean sea level. Upland forests dominate conveyance lands and are dominated by Oak-Pine Forest community type with some inclusions of Oak-Northern Hardwood Forest, and White Pine – Mixed Conifer Forest.

Remnant patches of critically imperiled Pitch Pine Heath Barren forest communities do persist in areas west of the airfield and at the former East Brunswick Transmitter Site where coarse sands are present at the surface and the invasion by white pine and red oak has been slowed.

Forested wetlands within the subject area include Red Maple-Sensitive Fern Swamp, and Spruce-Fir-Cinnamon Fern Swamp. Both types occur regularly throughout the region. Open, non-forested, freshwater wetlands within the subject area include small inclusions of palustrine shrub swamps not classified to the natural community level, pockets of palaustrine emergent wetlands where hydrology has been artificially impounded, and wet meadow communities dominated by saturated soil tolerant herbaceous plant species.

Tidal wetlands within the subject area include narrow bands of Freshwater Tidal Marsh, which is a rare natural community type in Maine, located at the upper end of the Mere Brook drainage and smaller un-named tributaries, transitions downstream to Brackish Tidal Marsh, also an uncommon community type, before developing full Salt Hay–Saltmarsh characteristics at the head of Harpswell Cove.

The Salt Hay–Saltmarsh community is relatively pristine in that there is little evidence of former ditching and few occurrences of invasive plant species such as Phragmites (notably present at the southwestern edge of the property possibly resulting from duck blind construction). Riparian buffers, however, have been previously compromised both at the weapons storage facility and existing golf course. Where possible, these areas should be allowed to re-establish with woody vegetation better able to protect water quality and shelter wildlife uses.

The most notable natural community occurrence within the conveyance lands are the naturally occurring Lowbush Blueberry Sandplain Grasslands present to the north and west of the existing airfield, and present as the dominant natural community type at the former East Brunswick Transmitter Site. This rare natural community type is considered critically imperiled in the State of Maine given the few remaining intact specimens statewide. Additionally, this community type is notably rare throughout the northeast and considered endangered in each of the states where examples persist. Sandplain grasslands occur only where natural deposits of coarse sands were left at the surface through glacial action. The nutrient poor soils favor a relatively specialized plant assemblage that includes several threatened and endangered plant species as well as rare wildlife species that depend on these unique physical conditions. Once more widespread where appropriate soil characteristics exist, sandplain grasslands have been incrementally lost given the favorable dry and well-drained conditions for development, commercial sand extraction for construction activities, and preclusion of natural fire regimes in response to public safety concerns. Much of east and central Brunswick supported sandplain grasslands at the time of settlement. However, only remnant patches persist today. The largest examples associated with the airfield and at the former transmitter site represent two of the largest remaining sandplain grasslands in the state of Maine.

Significant Wildlife Habitat

The entire extent of the tidal marsh complex within Kate Furbish Preserve has been mapped as a high value Tidal Waterfowl Wadingbird Habitat, a Significant Wildlife Habitat regulated by the Maine Department of Environmental Protection under the Natural Resources Protection Act. Tidal Waterfowl and Wading Bird Habitats are critical for several species of declining ducks, herons, egrets, ibis, shorebird, and passerine species. This marsh specifically is known to support populations of both Nelson's and Saltmarsh Sparrow. These saltmarsh dependent species are both designated as Special Concern species under Maine's Endangered Species Act. The outlet of the tidal marsh and head of Harpswell Cove has also been designated as high value Tidal Waterfowl and Wadingbird Habitat given the enriched intertidal mudflat community that supports a diverse invertebrate community which includes the economically important softshell clam. Harpswell Cove mudflats support hundreds of overwintering waterfowl including the regional focus species American black duck. Additionally, several species of shorebird utilize the mudflats to refuel during spring and fall migrations to and from artic breeding grounds.

Although vernal pool assessments completed as part of the Naval Air Station Environmental Impact Statement preparation have not been reviewed or officially accepted by the Maine Department of Inland Fisheries and Wildlife, the work indicates multiple vernal pools that meet MDIF&W criteria for Significant Vernal Pool designation, a Significant Wildlife Habitat regulated by the Maine Department of Environmental Protection under the Natural Resources Protection Act. Upon property conveyance, the town should verify the presence of these pools and submit data to MDIF&W for verification in order to finalize the status of these features and increase regulatory predictability for management decisions moving forward. It is likely that additional wetland features exist on the conveyance properties that have yet to be evaluated for the presence of vernal pool habitat. Prior to finalizing land use decisions, wetland and vernal pool assessments should be completed to better document existing conditions.

A Deer Wintering Area has been mapped by MDIF&W to the northeast of Kate Furbish Preserve associated with Mere Brook drainages and relatively closed canopy softwood forest conditions. White-tailed deer in Maine are at the northern limit of their geographic range. During winter months, deer are exposed to cold temperatures and deep snow that make it difficult to travel. Deer adapt to Maine winters by congregating in a deer wintering area, or habitat that offers reduced snow depths, accessible food, and protection from the wind. Deer wintering areas, commonly referred to as deer yards, consist of forested stands with a dense softwood canopy interspersed with mixed stands of hardwoods and softwoods. The dense softwood (spruce, fir, cedar, and hemlock) core areas provide shelter for deer by reducing snow accumulation and wind within the stand. The mixed hardwood and softwood cover provides food close to the core area. Red, sugar, mountain, and striped maple are winter staples for deer as well as arboreal lichens and litterfall from the crown of the forest canopy. Hemlock and cedar provide both cover and food when pieces of foliage break in the winter and are available as litterfall.

Inland Fisheries

Little work to document fisheries within Mere Brook, its tributaries, and streams draining to Middle Bay has been completed. The NAS Brunswick EIS references work completed by the US Fish and Wildlife Service in the late 1990's intended to document contaminants in Mere Brook brook trout populations. It is likely that no additional fisheries work has been completed in the last 15 years. Brook trout (*Salvelinus fontinalis*) have historically been present in Mere Brook, however, this species may no longer be present. Other species known to occur in Kate Furbish Preserve drainages include golden shiner (*Notemigonus crysoleucas*), common shiner (*Notropis cornutus*), blacknose dace (*Rhinichthys atratulus*), northern redbelly dace (*Phoxinus eos*), finescale dace (*Phoxinus neogaeus*) and American eel (*Anguilla rostrata*).

Stream systems within Kate Furbish Preserve do offer habitat restoration opportunities through the re-establishment of habitat connections lost as a result of poorly sized and installed culverts along former perimeter and maintenance roads, and the removal of a partially failed impoundment. It is likely that habitat restoration funds would be available to address the impoundment site given that jurisdictional wetlands have been impacted, natural stream flows blocked, and future ability of the coastal marsh to migrate inland prevented. The town should consider an application to the Maine Natural Resource Conservation Program as a next step in improving local fisheries habitat.

Rare Animal Occurrences

Comprehensive surveys for rare, threatened, or endangered wildlife have not been completed for any conveyance properties. This table is based on survey effort to date, but should not be considered complete. Future land use decisions should be based on specifically designed survey efforts that match level of survey effort with project type and existing habitat characteristics.

Species	***Status***	***Notes***
BIRDS		
Lesser Yellowlegs	Special Concern	Seasonal migrant to saltmarsh and mudflat communities
Great Blue Heron	Special Concern	Resident, utilizes freshwater and tidal wetlands on properties, nearby breeding colony on Lower Coombs Is.
Bald Eagle	Special Concern	Resident, active nest sites and Androscoggin and Lower Coombs Is.
Northern Harrier	Special Concern	Seasonal migrant utilizing open saltmarsh and grassland communities
Semi-palmated Sandpiper	Special Concern	Seasonal migrant to saltmarsh and mudflat communities
Upland Sandpiper	Threatened	Breeding species airfield grasslands
Whip-poor-will	Special Concern	Potential breeding species at transmitter site and forest edges of Kate Furbish Preserve
Least Flycatcher	Special Concern	Breeding species
Olive-sided Flycatcher	Special Concern	Seasonal migrant utilizing open wetland edges
Eastern Kingbird	Special Concern	Breeding species at transmitter site
Eastern Wood Pewee	Special Concern	Breeding species Kate Furbish Preserve
Horned Lark	Special Concern	Breeding species in grasslands north and west of airfield
Barn Swallow	Special Concern	Utilizes open marshes, wetlands and grasslands for foraging during breeding season
Northern Rough-winged Swallow	Special Concern	Utilizes open marshes, wetlands and grasslands for foraging during migration
Tree Swallow	Special Concern	Utilizes open marshes, wetlands and grasslands for foraging during breeding season
Wood Thrush	Special Concern	Breeding species Kate Furbish Preserve
Veery	Special Concern	Breeding species Kate Furbish Preserve
Brown Thrasher	Special Concern	Breeding species transmitter site
American Redstart	Special Concern	Breeding species Kate Furbish Preserve
Black-and-white Warbler	Special	Breeding species Kate Furbish Preserve

	Concern	
Canada Warbler	Special Concern	Breeding species Kate Furbish Preserve softwood dominated wetlands
Chestnut-sided Warbler	Special Concern	Breeding species East Brunswick Transmitter site
Prairie Warbler	Special Concern	Breeding species East Brunswick Transmitter site
Yellow Warbler	Special Concern	Breeding species East Brunswick Transmitter site
Grasshopper Sparrow	Endangered	Breeding species airfield grasslands
Nelson's Sparrow	Special Concern	Breeding species utilizing saltmarsh
Saltmarsh Sparrow	Special Concern	Breeding species utilizing saltmarsh
White-throated Sparrow	Special Concern	Seasonal migrant, forest edges
Eastern Towhee	Special Concern	Breeding species East Brunswick Transmitter site
Eastern Meadowlark	Special Concern	Breeding species East Brunswick Transmitter site and airfield grasslands
FISH		
American Eel	Special Concern	Resident breeding species Mere Brook drainages
INVERTEBRATES		
Cobweb Skipper	Special Concern	Known to occur at transmitter site, likely to occur in grasslands associated with airfield
Dusted Skipper	Special Concern	Known to occur at transmitter site, likely to occur in grasslands associated with airfield
Acadian Swordgrass Moth	Special Concern	Known to occur in Pitch Pine Heath Barren remnant patches
MAMMALS		
Species of Myotis and migratory tree bats are likely to occur on-site	Special Concern	Consideration should be given to the re-use of Kate Furbish Preserve bunkers as artificial bat hibernacula. White-nose Syndrome has devastated bat populations regionally and creative measures are necessary to aid recovery efforts.

Rare Plant Occurrences

Limited plant and animal surveys have been conducted on conveyance properties to date. The most comprehensive efforts were undertaken during the EIS process, but even those were limited by seasonality, access limitations, and consultant familiarity with local flora and fauna.

Species known to occur on conveyance parcels include:

Clothed Sedge (*Carex vestita*), a State Endangered sedge typically associated with sandplain grassland communities;

Dry Land Sedge (*Carex siccata*), a State Special Concern species also associated with sandplain grasslands as well as other xeric and disturbed soil types;

Mountain Honeysuckle (*Lonicera dioica*), a State Special Concern woody vine known locally to occur on coastal bluffs and shorelines;

Saltmarsh Bulrush (*Bolboschoenus robustus*), a State Special Concern species typically found at the upper tidal margins of coastal saltmarsh communities;

Saltmarsh False-foxglove (*Agalinis maritima*), a State Special Concern wildflower confined to intact coastal saltmarsh communities;

Small Reed-grass (*Calamagrostis cinnoides*), a State Special Concern grass of damp open and disturbed areas.

Future efforts to designate trails and other user amenities within the subject areas, especially sandplains, coastal slopes, and riparian edges**,** should be proceeded by additional botanical surveys to more comprehensively identify rare species occurrences.

Landscape Context

Eastern portions of the Kate Furbish Preserve site lie within the Maquoit and Middle Bay Focus Area of Statewide Ecological Significance as designated by MDIF&W and are therefore a conservation priority of Maine's Wildlife Action Plan. Additionally, several of the conveyance properties are included within the Freeport-Brunswick Important Bird Area (IBA) designation. The IBA program is a collaborative prioritization effort to identify key bird conservation areas undertaken by Birdlife International, the National Audubon Society and local partners Maine Audubon and Maine Department of Inland Fisheries and Wildlife. Both of these designations are due, in part, to the relatively unfragmented and intact local conditions of key habitat types including sandplain grasslands, tidal marshes, and intertidal mudflats.

Maintaining large parches of habitat connected with ‘corridors’ of relatively intact naturally vegetated lands is key to maintaining local ecological functions. In 2003 the Town of Brunswick

initiated an effort to identify locally significant unfragmented forest blocks and habitat connections between these blocks in response to recommended comprehensive plan strategies for conserving rural resources. The result of this effort was the creation of "wildlife habitat block" and "wildlife corridor" overlay districts intended to inform both town growth and conservation decisions.

During the development of the Rural Brunswick Smart Growth process that lead to these habitat identifications, the naval air station lands were not considered in the landscape design effort given the lack of municipal jurisdiction. However, landscape analysis and subsequent field work during the process indicated a functional habitat connection leading from the head of Maquoit Bay eastward to the naval air station lands. This corridor was intentionally included in habitat mapping efforts to help conserve habitat linkage should base status or management potential change in the future. The conveyance now provides an opportunity not only to depict a more comprehensive "emerald necklace" of connected habitats on local planning maps, but an opportunity to augment habitat connectivity by identifying strategic areas for security fence removal should the opportunity present itself. It is not expected that passive recreational use of the conveyance lands will impact landscape level habitat functioning, but any future activities that would result in significant clearing of natural vegetation should reference Rural Brunswick Smart Growth guidelines to minimize unnecessary habitat fragmentation. The East Brunswick Transmitter Site was included as a core component of one of the East Brunswick significant habitat blocks designated as part of the Rural Brunswick Smart Growth process.

Trails and Recreation Opportunities

In July 2009, the Town of Brunswick adopted the BNAS-related zoning districts including the BNAS Conservation District. The District's purpose is to preserve, maintain and enhance existing natural areas and to provide for the long- term benefit of the natural environment in accordance with the accepted BNAS Reuse Master Plan and 2008 Update of the Town's Comprehensive Plan. The Conservation District includes the large, undeveloped area at the southeast end of the former base and areas to the west of the runways that have natural resource value or are unsuitable for development.

As noted the BNAS Conservation District allows for a number of examples of permitted uses commonly characterized as 'passive recreation' defined by the Brunswick Zoning Ordinance as recreation "walking, hiking, and biking and other similar activities…specifically excluding motorized vehicles and equipment." In contrast, 'active recreation' can be described as that which requires intensive development and often involves cooperative or team activity, including playgrounds, ball fields and skate parks.

An improved trail network is planned for the public to access the Kate Furbish Preserve and other public benefit conveyance lands for passive and active recreation purposes. In addition to the generic term 'trail', the following terms will be used for further describing trails within this area. Rather than replicate detailed design guidelines in this plan, established reference documents will be used. See the appendix for more detailed trail specifications.

- Shared-use path: smooth surface either paved or gravel (e.g. wheelchairs, cross-country skiing, etc.) *The Maine Trails Manual* and the *Federal Highway Administration (FHWA) Trail Guide* are the recommended design guideline references for shared-use paths.
- Footpath: natural surface (e.g. hiking single file). *The Maine Trails Manual* and the *Appalachian Trail Design, Construction and Maintenance* handbook are the recommended design guideline references for footpaths.

Trail Layout Principles

The Principles below are derived from these design guideline references and other management plans and are meant to be more general for purposes of initial trail layout on plan maps. The specific location of trails will be marked on the ground (flagged) in consultation with the design guideline references.

- Reuse and rehabilitate existing and abandoned trails as much as possible, versus new construction, in consideration of cost and impact on natural and cultural resources considerations.

- New trail construction and trail improvements must avoid adverse effect (damage) to archaeological sites, and the Maine Historic Preservation Commission will be consulted as part of the trail design process.
- New trail construction will be considered for short side trails, for connecting trail segments together or for creating loops.
- Trails within the Town's Natural Resource Protection Zone (shoreland zone) will follow vegetation clearing guidelines contained in the Brunswick Zoning Ordinance. Trails will avoid vernal pools and other sensitive natural areas. Potential exception for short trail segments could be for interpretive purposes, viewpoints or overlooks.
- Minimize trail development in environmentally sensitive areas and areas with environmental contamination.
- Give preference to loops, connections to trailheads, and access to the community. Utilize 'out-and-back' trails to access natural and scenic views.
- Shared-use paths should be focused on the perimeter of the property or to connect to trailheads.
- Phase the development of trails and plan for a low trail density initially. Let the public use influence plans for additional and fill-in trails.
- Sections of the roads currently used within the BNAS Conservation District, are to be retained for general public motor vehicle use to provide better access to the trail network.

Individual Property Management Plans

Kate Furbish Preserve Management Plan

Goals and Management Principles

Management and Stewardship Vision

The Kate Furbish Preserve will serve ecological, passive outdoor recreational, and cultural functions that enhance the quality of life for local residents and visitors alike. The property will be managed to provide passive recreational and trail-based uses and consumptive (i.e., hunting, fishing) recreational activities as well as to attain ecological and wildlife management goals.

Signs and structures will impart a sense of appreciation for the resources shared and stewarded. Staff, signs, publications, or any other forms of communication will welcome users and advocate low-impact recreation practices. Site improvements will be designed to meet evolving outdoor recreation demand and will be in line with the Preserve's character. The Kate Furbish Preserve will be a trail destination, with desirable, diverse, and sustainable trails. Trail enthusiasts will have access to well-managed trails during all seasons. Continual efforts will be made to ensure that evolving trail demand and patterns of use are understood and addressed to the extent possible with existing resources. Ongoing communication will keep open the possibility of forging landowner and user groups' partnerships to establish new conservation and trail linkages further expanding connectivity in the region.

Non-trail recreational experiences will continue to be valued and managed on all properties. Hunting will be allowed in appropriate areas for hunting (without significant safety concerns due to proximity to neighborhoods, businesses or trails) and will be deliberately considered during all planning and development activities. The scenic importance of undeveloped areas and culturally important sites experienced from Harpswell Cove, local roads, and trails will be managed to ensure that quality of place and community heritage is not compromised.

Management decisions and activities will minimize environmental impacts while looking for opportunities to improve wildlife habitat and protect environmental quality. As with most

aspects of management, wildlife habitat and ecological management considerations will be explored with appropriate governmental and non-governmental partners.

The overarching vision of this plan is that the Kate Furbish Preserve will be a cherished local and regional asset where people can reap the rewards of permanently conserved, well-managed outdoor areas providing a range of experiences. This property will continue to be a close-to-home outdoor recreation resource for residents of southern midcoast Maine as well as a destination for visitors.

Purpose

The primary purpose of the Kate Furbish Preserve Management Plan is to guide the management of the property in a manner that protects its natural and cultural resources in perpetuity and provides passive recreational and educational opportunities. These goals and management principles are intended to direct future management of the Kate Furbish Preserve.

Management Goals

Management goals for the Town of Brunswick Kate Furbish Preserve public benefit conveyance lands are to:

- Manage and conserve the natural resources of the Kate Furbish Preserve property in perpetuity;
- Manage and conserve the cultural resources of the Kate Furbish Preserve property in perpetuity; and
- Provide and manage passive recreation use and trail resources on the Kate Furbish Preserve property, for their aesthetic and passive recreational values to enhance the quality of life in the Greater Brunswick area.

Kate Furbish Preserve (formerly known as REC-7)

Naming REC-7 the new Kate Furbish Preserve

Brunswick High School students who were part of the cultural and historic resources working group, were asked to recommend names to the Recreation Commission for designation of REC-7. After carefully researching all attributes of the REC-7 area, consideration was given to its historic importance and relevance of its natural setting. Three names were submitted for consideration: Thomas Purchase Preserve, Woodward Preserve, and Kate Furbish Preserve. The Recreation Commission released a statement to the public regarding the choices, inviting any other names to be submitted and asking for community input. The overwhelming choice was The Kate Furbish Preserve. The Recreation Commission accepted the choice of Kate Furbish Preserve, reported the results of the citizen consensus to the Recreation, Trails and Open Space Management Plan stakeholder committee. The Brunswick Town Council will consider the new name – Kate Furbish Preserve at the public hearing being held on June 17, 2013.

Kate Furbish Preserve Property Map

Cultural and Historical Significance

The challenging geographic setting of Kate Furbish Preserve has dictated its historic use. This hillock region has a moderate to steep sloping topography. Shallow tidal waters and coastal marshes border the shoreline. Glacial till as well as marine silt and clay underlay soils that are generally thin with limited pockets of arable land. Granite outcroppings can be found running southwest to northeast throughout the area.

Agriculture was difficult here. Marginal grain and seed crops along with limited grazing were the means to maintain family farms that dotted the area. This was one of the last regions of the community to be settled and was never extensively developed. Farms were large and dispersed, and retained that distinctive quality well into the twentieth century. In other parts of the town agricultural efficiency and generational needs reduced farm size over time. Within the Kate Furbish Preserve area, landholdings remained sizable necessitated by the difficulty in maintaining a sustainable farm operation.

The shoreline provided little opportunity for agriculture or development. Steep sloping banks, marsh, and shallow draining tides all attracted little commercial or recreational interests. Forest stands within Kate Furbish Preserve have historically provided local farmsteads with cordwood and were later commercially harvested for pulpwood. There is no evidence of long term sustainable lumber operations.

During the tenure of NASB occupation, 1953-2011, few farms in the area were torn down. A survival school with minimal intrusion on the land was run on the western shore of the salt marsh at the head of Harpswell Cove. Later a series of large bunkers were built to house weapons and the area tightly secured. Without viable mineral assets and limited agricultural opportunities, the Kate Furbish Preserve area was an isolated region in the fringes of the Middle Bay / Merriconeag community. Compared to other parts of Brunswick, this part of town's natural setting has had limited environmental alterations.

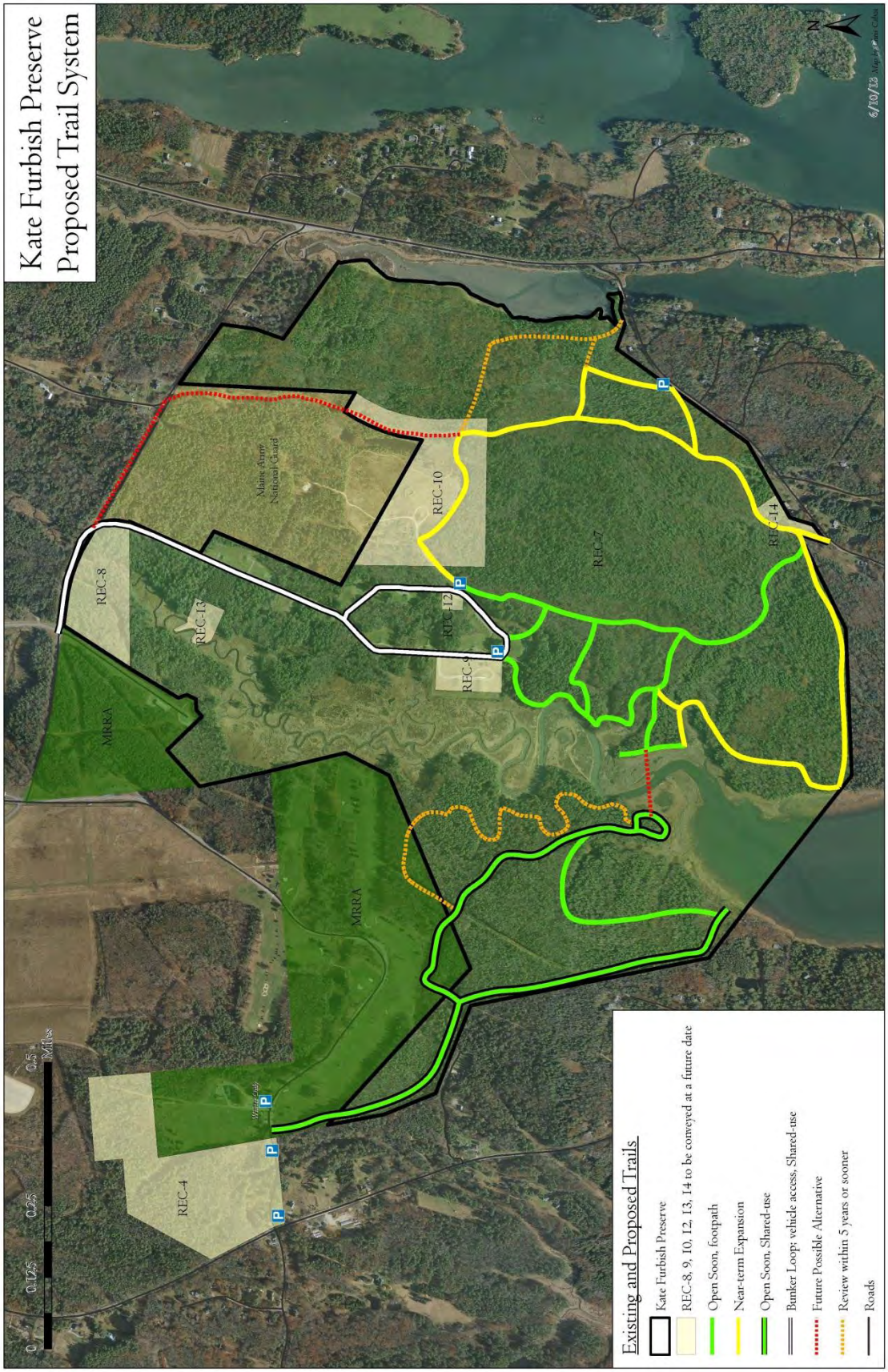
Trails

The southern conservation area is 591 acres (at conveyance) within the BNAS Conservation District, bisected by the tidal outlet of Mere Brook and associated saltwater marsh into a west (Golf Course) and east (Prince's Point) side. With the exception of weapons storage and ordinance disposal, this area was used little by the Navy and served as a natural area buffer to the more developed portions of the base. The predominant trail experience on Kate Furbish Preserve is one with relatively flat walks through pleasant woods. The scenic highlight of the trails is the beautiful and spacious Mere Brook estuary which bisects the open space. The estuary includes acres of marsh grass and a tidal channel that fills to the edges at high tide and reveals mudflats at low tide. While a trail crossing of the estuary would connect the two sides of Kate Furbish Preserve, it is clear that such an undertaking would be expensive and require in-depth engineering and environmental permitting. In lieu of or before a trail crossing could be built, a pier/boardwalk, perhaps from the bunker area could bring pedestrians to the edge of the estuary for a gorgeous and memorable view of the marshes and the ocean beyond.

The west side Kate Furbish Preserve is currently accessed by motor vehicle via the golf course entrance on Merriconeag Rd. The east side can be accessed by entering the Bath Road front gate, proceeding through Brunswick Landing south past the U.S. Marine Reserve Center to the 'bunkers' area. A section of fence needs to be removed for access. Access to Brunswick Landing from Coombs / Purinton Rd is a consideration. There is limited access from Prince's Point Rd.

Recreational parking for summer use of the west side of Kate Furbish Preserve would be roadside parking on Town land just outside the golf course entrance gate. Additional parking is at the corner of Harpswell and Middle Bay Road on Town land. An agreement should be finalized with MRRA to continue to allow cross-country skiers to park in the golf course parking lot and use and groom ski trails on the golf course during the winter. The primary parking for access to the east side is envisioned along Ordinance Road that leads to and amongst the 'bunkers'. A small amount of parking is located off of Princes Point Road, where Kate Furbish Preserve abuts at an old road bed. Another 1,000 foot section of Kate Furbish Preserve also abuts the road and could be the location of a small new parking lot. In the future, parking might also occur somewhere along Coombs Road.

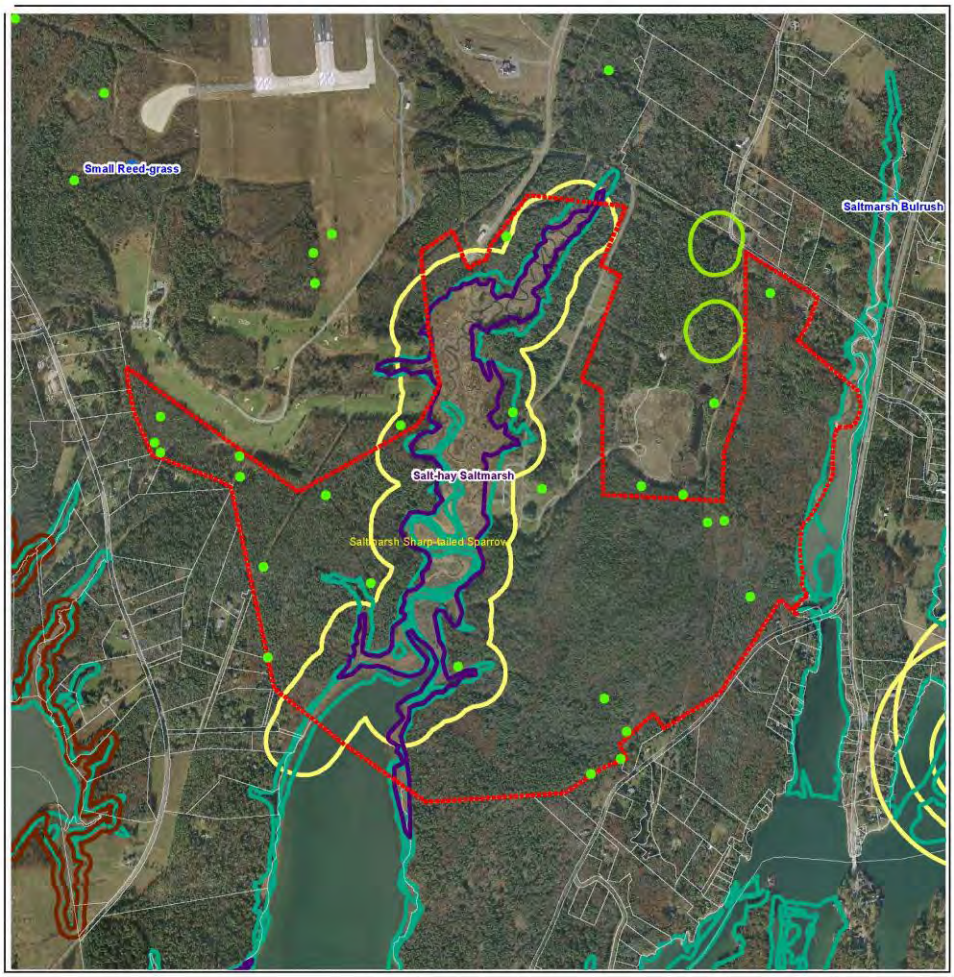
In 2011, about 5 miles of abandoned roads, unimproved woods roads and 'Jeep' tracks were inventoried within the area and served as the 'base map' for trail survey work. Spring 2012, these old roads were visited as well as other man-made and wildlife tracks. The trails group of the stakeholder committee conducted over 25 trail-related field visits in 2012. In April 2012, a draft trail network was mapped. Subsequent site visits and on-the-ground checks refined the trail layout. This trail network was transcribed to a digital map. Some sections of proposed trail utilize engineered and Navy-maintained perimeter roads while other sections are to be newly constructed or require significant remedial work. The proposed trails are either shared use (wide, flat surface, multiple users) or footpaths (narrow, natural surface hiking trails). The goal is to create some shared use paths that will be accessible to all. Some proposed trails lie in areas that will not be immediately conveyed to the Town by the Navy.


Kate Furbish Preserve
Proposed Trail System
Existing and Proposed Trails
Kate Furbish Preserve
REC-8, 9, 10, 12, 13, 14 to be conveyed at a future date
Open Soon, footpath
Near-term Expansion
Open Soon, Shared-use
Bunker Loop; vehicle access, Shared-use
Future Possible Alternative
Review within 5 years or sooner
Roads
0 0.125 0.25 0.5 Miles
REC-4
REC-8
REC-13
REC-10
REC-12
REC-9
REC-7
REC-14
MRRA
MRRA
Maine Army National Guard
Visitor Info
6/10/13

Natural and Ecological Resources

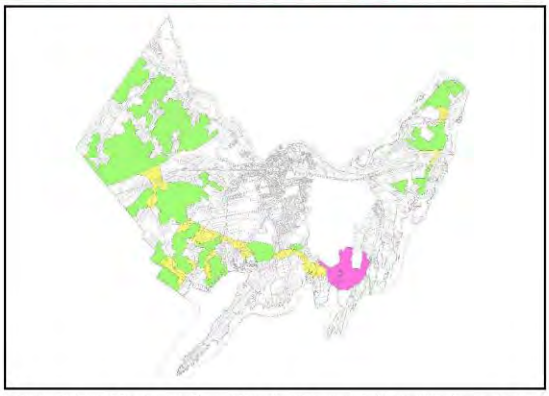
The key features of the 591-acre Kate Furbish Preserve parcel are a central, intact tidal marsh system with varying salinities and corresponding vegetative communities, and large unfragmented forest blocks that buffer tidal wetlands associated with Mere Brook and Harpswell Cove. Kate Furbish Preserve is a regionally significant conservation land based on shear acreage, diverse habitat opportunities, and contribution to the protection of economically important marine resources of Harpswell Cove. Conservation of these 591-acres will protect the long-term resiliency of local wildlife populations by maintaining connectivity between west and east Brunswick and connections to the Harpswell peninsula. Additionally, the site will offer unprecedented access to intact natural areas for greater Brunswick residents to enjoy for generations to come. As public access amenities including a network of publicly accessible trails are developed, it will be critical to design resource crossing and overlooks in a manner that not only maintains natural functions of the resources but that also provides users with meaningful opportunities to experience natural processes as they unfold with the changing seasons. The following are suggested management recommendations intended to guide future recreational development of Kate Furbish Preserve in a way that minimizes impacts to the site's existing ecological functions.

REC - 7 Significant Plant & Animal Habitats



REC-7 Boundary
Rare Animal Species
Rare Communities
Rare Plants
Significant Vernal Pools
Shorebird Areas
Tidal Waterfowl/Wading Bird
Potential Vernal Pool

0 1,000 2,000 4,000 Feet



REC-7 in context with Rural Brunswick Smart Growth unfragmented forest blocks and habitat corridors

Management Priorities and Recommendations

Natural Resources

Specific Resource Concerns

Vernal Pools

- Avoid vernal pool depressions with trail alignment and associated construction work.
- Where possible maximize undisturbed buffer surrounding pool depression through trail re-alignment and minimization of clearing during trail construction.
- At select pool(s) provide interpretive spur trail with raised wooden platform for pool observation. Two significant pools occur along the perimeter road on the west side of the Kate Furbish Preserve. Both are potential candidates for such access.
- When funding allows install interpretive signage regarding vernal pool ecology.
- Some vernal pools on-site have had their hydrology enhanced by existing roads or other artificially impounding features. The impounding features should be maintained and not dewatered during trail network development.

Tidal Waterfowl and Wadingbird Habitat

- Cutting of woody vegetation within 100-feet of the upland edge of the tidal marsh or mud flat communities should be avoided to the extent possible in general trail design in order to maintain a visual buffer between wildlife in the wetlands and human activity.
- Overlooks for wildlife watching should be incorporated into trail design, but openings in the shoreline buffer to support these amenities should be designed to be as minimal as practicable.
- The marsh surface includes several salt panne complexes that likely attract concentrations of wadingbirds and shorebirds. Over looks should be positioned in the uplands to provide strategic observation opportunities of these areas while not impacting wildlife use (structures should be placed a minimum of 120-feet from the pannes and be partially buffered by vegetation).
- Foot traffic in the marsh during the breeding season April 1 to August 30 should be discouraged if not prohibited.
- Dogs, other than those used for hunting should remain leashed and not allowed to run in the marsh during the breeding season April 1 to August 30.
- If a structure is proposed to cross the tidal marsh, it should be designed to cross at the upper narrow portion of the wetland complex, and be designed in close consultation with the Maine Department of Inland Fisheries and Wildlife to minimize impacts to wildlife and the marsh surface.

Streams

- Trail crossings of streams should be kept to the minimum necessary to maintain trail connectivity.
- Crossings should be positioned at narrow points and should avoid steep slopes.
- Crossing structures should be designed to maintain a 1.2 bank full width where possible in order not to restrict natural flows or increase stream velocities during storm events.
- Vegetation removal within 100-feet of streams should be avoided as possible in general trail design.
- Trails should be designed, built and maintained in a manner that prevents channelized drainage to streams and that prevents soil erosion within 100-feet of streams.
- When funding is available the town should consider habitat restoration activities at existing undersized and poorly installed culvert crossings and at the failed impoundment in the southwest portion of the Kate Furbish Preserve.

Forest Management

- Promoting the development of and maintenance of late successional stands (>70 years) should be the general goal of any on-site forest management.
- Areas dominated by overstocked, even aged white pine and pine plantations should be thinned or eliminated in order to promote mixed age more natural forest conditions.
- Apple trees and other notable trees dating from former Middle Bay/Merriconeag community should be released from competing growth as funding allows.

Invasive Species

- Japanese knotweed (*Fallopia japonica*) occurs along portions of the perimeter road on the west side of Kate Furbish Preserve and was likely introduced with fill associated with road construction. Stands should be addressed with a combination of herbicide and blanketing.
- *Phragmites australis* is present in the Harpswell Cove salt marsh at the very southwest corner of the property. This stand should be a priority for near-term treatment to prevent further spreading.
- Japanese barberry shrubs occur scattered in the understory of the former survival training portion of Kate Furbish Preserve. Occurrences should be treated soon to prevent further spreading.
- Whenever invasive plant species are encountered during trail construction or property management activities, locations should be recorded and stands treated as conditions allow.

Habitat Restoration

The following are recommendations for habitat restoration for Kate Furbish Preserve:

- A partially failed impoundment is present on the west side of Kate Furbish Preserve near the head of tide of a tributary stream. The town should consider applying for Maine Natural Resource Conservation Program funds to have the natural channel restored and earthen dam removed. Such action would restore aquatic organism passage and allow for natural tidal action in the future.
- Two perimeter road culvert crossings on the west side of Kate Furbish Preserve currently block aquatic organism passage. Both should be considered for replacement as funding permits.
- Areas of ongoing erosion are present along stretches of existing roads. Where possible these areas should be addressed during trail upgrades.

Pertinent Natural Resource Regulations

Aside from Significant Wildlife Habitat rules as administered by the Maine Department of Environmental Protection that address activities within the tidal marsh, and within 250-feet of Significant Vernal Pools, several other regulations may potentially be triggered by the development of passive recreation amenities on this property:

- Natural Resources Protection Act (NRPA) - Applies to any activity that disturbs soil in any freshwater wetland regardless of size. Currently there is a permitting exemption for minor activities (e.g. wetland disturbance under a cumulative total of 4,300 square feet) not proposed within Wetlands of Special Significance. This rule also applies to any activity within 75-feet of coastal wetlands and streams.
- US Army Corps of Engineers - Under the Clean Water Act, the Corps also has jurisdiction for activities within freshwater wetlands and coastal wetlands, and streams. Although administration of Corps permit procedures somewhat piggyback on state administered NRPA procedures, there are differences in project requirements. For instance, the Corps can require greater setbacks from vernal pools, even those considered non-significant by MDEP.
- Natural Resources Protection Zone (NRPZ) - This is the Town of Brunswick's town-wide application of state Shoreland Zoning laws. The NRPZ standards apply to all activities within 250-feet of tidal water and 75-feet from streams.

Prior to initiating any trail construction or enhancement activities, the Town of Brunswick will need to complete on-site wetland delineations, resources surveys, and design a trail network that avoids and minimizes resource impacts to the extent possible. As wetland impacts are considered cumulatively for all projects, it will be important to: 1) attain a determination from

MDEP that wetland impacts associated with trail construction are considered separately or cumulatively with other wetland impacts associated with Brunswick Landing redevelopment; and 2) document and quantify each proposed wetland impact associated with trail construction and request a pre-application meeting with MDEP to discuss permitting requirements.

To date, wetland crossings along most of the proposed trail corridors have been field delineated and marked with pink numbered flagging. Additionally multiple stream crossings are proposed. These crossings as well as any wetland disturbance within 75-feet of coastal wetlands are not typically eligible for activity impact exemptions. At several locations it appears that minor adjustments of the proposed trail alignment would further minimize resource impacts. Based on this initial work, wetland impacts are estimated to exceed permit exemption thresholds based on assessment of the current proposed trail alignments as flagged in the field.

REC - 7 Soils & Wetlands

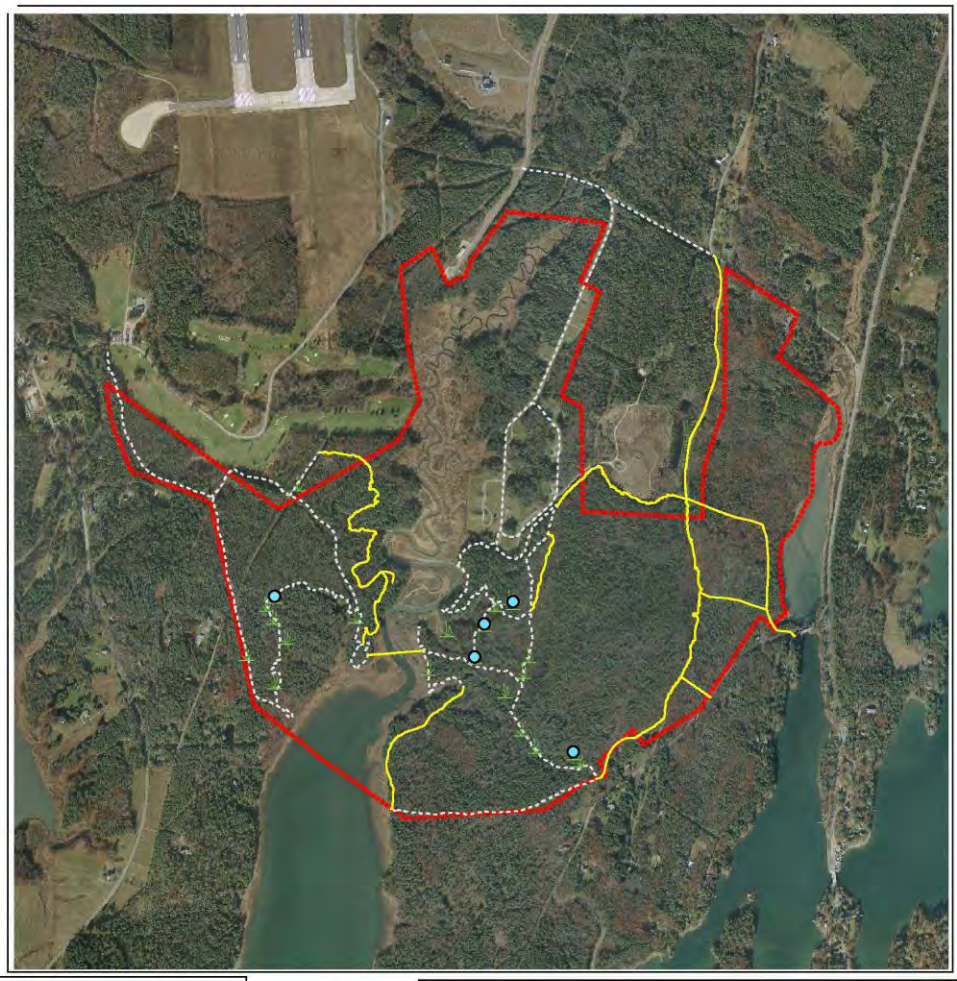
REC-7 Boundary
Soil Units (approximate)
Wetlands (approximate)
10-foot contours

0 1,000 2,000 4,000 Feet

Soils Key

Map Symbol	Soil Name
15A	HAPLAQUENTS-LAMOINE COMPLEX
27A	LAMOINE SILT LOAM
34B	TURNBRIDGE FINE SANDY LOAM
34C	TURNBRIDGE FINE SANDY LOAM
BgB	BELGRADE VERY FINE SANDY LOAM
BuB	BUXTON SILT LOAM
BuC2	BUXTON SILT LOAM
DeA	DEERFIELD LOAMY SAND
HrB	HOLLIS FINE SANDY LOAM
HrC	HOLLIS FINE SANDY LOAM
HrD	HOLLIS FINE SANDY LOAM
LyB	LYMAN FINE SANDY LOAM
LyC	LYMAN FINE SANDY LOAM
Sn	SCANTIC SILT LOAM
SuD2	SUFFIELD SILT LOAM
Sz	SWANTON FINE SANDY LOAM
Tm	TIDAL MARSH
W	WATER
WrB	WOODBRIDGE FINE SANDY LOAM

REC - 7 Reconnaissance Wetland Work



REC-7 Boundary
Wetland Crossing
Stream Crossing
Trails Visited
Trails Not Visited

Note: Wetland boundaries flagged in field where blue flagging indicated potential trail corridor. Wetland boundaries require survey location. Trail construction in wetlands may require MDEP and ACOE permit.

0 1,000 2,000 4,000 Feet

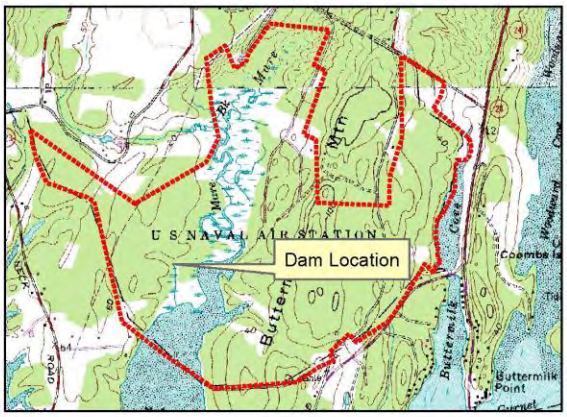
REC-7 in context with Rural Brunswick Smart Growth unfragmented forest blocks and habitat corridors

REC - 7 Wetland Restoration Opportunities

REC-7 Boundary
Highest Annual Tide +1m

Note: 2001 aerial photo shows full pond conditions. Dam failed several years ago leaving partially filled impoundment.

Feet
0 100 200 400



REC - 7 Wetland Restoration Opportunities

Partially Drained Impoundment April 2013

Breach in Dam with Cement Culverts

Earthen Berm with Embedded Cement Slabs

Tidal Wetland Downstream of Dam

Cultural and Historical

The following are recommendations in regards to the cultural and historical aspects of Kate Furbish Preserve:

- Create a map inventory of the Kate Furbish Preserve, maintained by the Planning and Development Department that identifies coordinates of prehistoric and historic sites, in conjunction with the Maine Historic Preservation Commission.
- Log coordinates of confirmed Euro American Sites (EAS) within the proposed preserve, as approved by the Maine Historic Preservation Commission.
- Consider the creation of an Archaeological Overlay District for the proposed preserve with supervisory responsibility assumed by a public commission. This commission should establish the protocols and procedures for its charge.
- Establish "No Ground Disturbance" and "No Removal of Debris" policies as components of the Kate Furbish Preserve management. Post appropriate signage for guests.
- Cap existing open debris or dump sites.

Recreation Trails Layout and Use

In September 2012, Trail Services, Inc. was contracted by the Town of Brunswick to check the recommended trail alignment, map the trails with GPS tracks, flag the recommended trails, and develop initial cost estimates for opening to the public the approximately 2.6 miles of ***'Open Soon'*** trail. If and when the entire recommended trail system is implemented, there will be 3.5 miles of shared use trails and 2 miles of footpaths.

Depending on staff and financial resources, the proposed trail system development will be phased as follows:

- ***Open Soon:*** trail that is currently used or can be used with vegetative clearing and some signage (green on map)

- ***Near-term Expansion:*** trail that requires construction and/or surface improvement, pending funding capacity (pink on map)

- ***Review Within 5 Years:*** trail that will require more extensive funding and construction (orange on the map)

- ***Future Possible Trails:*** trail that requires neighboring landowner permission or significant design & engineering work (red on map)

The west-side of Harpswell Cove trail system is best accessed near Mere Brook Golf Course clubhouse (near the intersection of Middle Bay and Harpswell Rds.). For the past several

seasons, the Town has been permitted by the Navy and MRRA to use the golf course and woodland (perimeter) roads as groomed cross country ski trails. Approximately the first 500-feet of the perimeter road are on MRRA-owned land (behind the First Hole of the Golf Course). The Town will need an access easement to allow trail use. The perimeter road splits into two branches ending at the saltwater marsh with views south to Harpswell Sound. In the past, skiers have skied through the woodland to connect the two branches forming a loop. It is proposed to layout a 0.5-mile footpath to complete the loop. Although not to the standard of the 1.5-mile proposed shared-use path, the footpath will allow 4-season use. Another footpath north along the shore, then along the golf course southern edge, is proposed as a ***'Review Within 5 Years'***.

The east-side trail system is best accessed from within Brunswick Landing (Front gate to Purinton Rd. to Major Pope Ave. to Ordinance Rd.) at the 'bunkers' area (which will require fence openings for access), or from the southern property boundary off Prince's Point Rd. The Navy has not used the perimeter road on this side for over 15 years and allowed the road to become overgrown. Initially, the perimeter road, which will eventually be a shared-use path, would be cleared as a footpath. An additional 1.4 miles of a newly constructed footpath, requiring only vegetative clearing, is proposed for ***'Open Soon'*** which will provide a scenic loop or 1-way walks, many of which will provide views to the estuary. As additional parcels are conveyed to the Town, another 1.1-miles of shared use path (shown as ***'Near Term Expansion')*** is proposed to provide a nice loop, and possibly access from Coombs Road. A loop trail to Buttermilk Cove could be developed as a single-track mountain bike loop.

Actions:

- Finalize an agreement with MRRA that allows permanent public access to the old perimeter road and for the trail that connects the perimeter road/trail to the other existing and recommended dirt road/trail. The agreement should also allow for winter use of the golf course parking lot and for cross-country skiing on the golf course.
- Work with the Maine Department of Environmental Protection to acquire all necessary permits to construct the ***'Open Soon'*** and ***'Near Term Expansion'*** parts of the recommended trail system.

- Investigate Maine Army National Guard, Seabee, Maine Conservation Corps, volunteers, and other labor sources to begin clearing the flagged trails.
- Apply for Recreational Trails Program (RTP), and other funding sources for trail construction and signs.

Public Access

Public access to the Kate Furbish Preserve will include accommodations for both motor vehicle parking and bicycle and pedestrian access in a variety of locations. The plan calls for development of parking areas along Merriconeag Road on the western boundary of the property, along Ordnance Road in the center of the parcel, and along Prince's Point Road at the eastern boundary. Each of these designated parking areas will be collocated with trailheads providing the public with immediate access to the property and information regarding its features.

Uses and Management Issues

Motorized Recreation

Motorized recreation vehicles are ONLY allowed on the property for management, emergency, or maintenance activities. Access is not allowed for ATV's, snowmobiles, and golf carts.

Bicycles

Shared use paths will accommodate bicycles. There will also be designated footpaths that will not allow bicycles.

Action: At present, there are no designated single-track mountain bike paths. A process should be undertaken to explore options and determine if there are appropriate locations within the Kate Furbish Preserve area to develop designated single-track mountain biking paths.

Dogs

Dogs will be allowed on leash only as per town and state laws and ordinances. Dogs may be restricted from areas designated as sensitive ecological habitats. Dog owners must pick up after their dogs in Kate Furbish Preserve. Staff and volunteer stewards will educate dog owners about the importance of picking up after their dogs in the Preserve. Removing dog waste will make Kate Furbish Preserve more enjoyable for other recreational users, and minimize the potential for pollution. Dogs, other than those used for hunting purposes should remain leashed and not allowed to run in the marsh during the breeding season April 1 to August 30.

Hunting and Trapping

All hunting and trapping activities shall take place in accordance with laws of the State of Maine, laws and rules of the Maine Department of Inland Fisheries and Wildlife, and local ordinances.

- In Kate Furbish Preserve, hunting will be allowed with restriction to shotgun, black powder and bow hunting only. Trapping will be allowed only with a permit from the Town for the purpose of wildlife management.
- The possession and / or use of firearms or weapons is prohibited, except in accordance with State hunting laws and in designated areas.
- In accordance with State law, no discharge of firearms within 300 feet of a residence.
- Work areas and areas with significant public use may be temporarily posted as closed to hunting by park management in the interest of public safety.
- Baiting of wildlife for the purpose of hunting is prohibited.
- No target practice or firing ranges allowed on the Kate Furbish Preserve property.

Horses

At this point in time, horses are not allowed in the Kate Furbish Preserve. Once trail improvements have been made, horses will be allowed in designated areas.

Fishing

Fishing is allowed in accordance with the laws of the State of Maine, the laws and rules of the Maine Department of Inland Fisheries and Wildlife, and local ordinances from the shoreline or as available from hand carry boat access sites.

Camping

Camping is prohibited on the Kate Furbish Preserve.

Campfires are not allowed due to the danger they pose to the natural forest habitat. Any fire rings found in Kate Furbish Preserve will be dismantled and "Kindle No Fires" signs will be posted. "No Camping" signs will be posted if illegal camping becomes a problem.

Actions: Post "No Camping/No Campfires" sign at proposed parking lot.

Hours of Operation

Kate Furbish Preserve is open from one hour before dawn to a half hour after dusk. Parking will be allowed only when the Preserve is open.

Action: Post signs clearly stating Preserve rules and hours of operation at all public access points.

Fencing Needs

Most of the fences should be removed over time. As sections of fence are removed, the abutters / neighbors have the option to erect a fence on their own property. Where necessary, signs could be posted asking the public to respect private property.

Action:

- Communicate to the public that over time, the fences will be removed.
- Remove all barbed wire fencing as soon as possible (except barbed wire attached to top of chain link).
- When chain link perimeter fencing deteriorates beyond its useful life, it will be removed and there will be no replacement.
- Portions of interior chain link fencing may be removed as funding is available to manage access, enhance recreational uses, and improve wildlife connections.

Hand carry boat access

While it would be desirable to provide a hand carry boat access location, to date no appropriate site has been identified.

Signage

Ensuring proper signage for directing and instructing users, displaying Preserve rules and to clearly mark trail locations is critical to Kate Furbish Preserve management objectives.

Action: Develop signage plan for Kate Furbish Preserve that clearly outlines locations and content of signs

Trash

Trash will be managed with the "carry-in, carry-out" practice. All trash brought into Kate Furbish Preserve or created by Preserve users must be carried out. Trash receptacles will be provided at parking areas.

Native trees and vegetation

Support and maintenance of natural processes is a primary goal for the Kate Furbish Preserve. Staff and volunteer stewards should not cut trees in Kate Furbish Preserve simply because they are dead. Dead snags support multiple species of wildlife and birds and should be left standing. Dead snags should only be cut if there is a compelling reason related to the safety of visitors.

Similarly, fallen trees should generally be left intact on the ground to support decomposition processes and replenish the soil. Only sections of fallen trees or vegetation blocking trails should be cut. Removed sections should be carried to a location not readily apparent to recreational trail users. In general, vegetation should not be removed to create vistas or unencumbered views and are further restricted by Town NRPZ Overlay standards. Additional clearing of vegetation could degrade the natural environment of Kate Furbish Preserve and the biological integrity of the shoreline.

Invasive plants and animals

Some plant and animal invasions may not be particularly disruptive. However, others can be very serious, threatening the biological integrity of the Kate Furbish Preserve. Plants such as Japanese knotweed, purple loosestrife and non-native honeysuckles have been documented to out-compete native vegetation in southern Maine and therefore should be considered a serious threat if located on the Kate Furbish Preserve. Routine monitoring should be conducted to identify and remove infestations of new invasive plants before they become a major concern. Methods of controlling invasive plants should be researched. Those methods demonstrated to be effective with minimal negative ecological consequences should be used in Kate Furbish Preserve. In general, best management practices should be used in order to minimize pesticide or herbicide applications. However, for some invasive species, herbicides may be the most effective and appropriate method of control.

Structures

Unauthorized temporary or permanent structures are not permitted in Kate Furbish Preserve. Memorials, unauthorized signs and posters, tree houses, forts, and deer stands are examples of structures not permitted. Stewards should remove any unauthorized structures. If warranted,

portable toilets and potentially permanent toilets may be placed in the parking area. Structures may also be necessary for trail needs and for communicating park rules, etc. These structures could include kiosks, bridges, benches, picnic tables, signs, etc. Structures should only be constructed after being approved in a comprehensive structures and amenities plan for the property.

Action: Develop a plan for amenities and structures on the Kate Furbish Preserve.

Vandalism

Minimize vandalism by using staff and volunteer stewards to conduct routine patrols; report problems to the Police Department, the Department of Parks and Recreation, or volunteer stewards. Evidence of vandalism should be promptly eliminated. Parks and Recreation staff and volunteer stewards will make a concerted effort to educate the public about respectful use of the Preserve.

Baseline inventories

The Brunswick Conservation Commission and volunteer stewards may conduct baseline inventories of the Kate Furbish Preserve to understand its natural resource values and maintain data collected in a format readily viewable by interested staff and volunteers.

Monitoring and Evaluation

Annual inspections and reporting requirements

Properties will be inspected annually for indication of trespassing, natural damage, safety hazards, environmental impacts, boundary infringements, and other issues. A written record of the inspection will be kept on file. If management problems are identified, the Department of Parks and Recreation will develop a plan for addressing these problems in a timely manner.

Boundary Marking

Nearly all of the boundaries on Kate Furbish Preserve have been posted by the Navy. The boundary of the property should be monitored yearly to check for violations and to make sure the boundary signs are intact. The boundary should be brushed and re-signed every five years as necessary.

Actions:

- Walk boundary annually to check boundary signs and look for boundary incursions.
- Brush and re-sign the boundary every five years as needed.

Updating and Amending the Recreation, Trails and Open Space Management Plan

The Management Plan is a living document that will need to be amended to ensure proper management of the lands over the long-term. The Department of Parks and Recreation with input from the Conservation and Recreations Commissions will be responsible for making recommendations for amendments to the plan. Amendments to the plan should be vetted through a public process with final approval on amendments to be made by the Town Council.

REC-1, 2, 3 Management Plan

Placeholder for REC-1,2, 3 Management Plan section (to be developed at a later date)

REC-4 Management Plan

Placeholder for REC-4 Management Plan section (to be developed at a later date)

REC-5 Management Plan

Placeholder for REC-5 Management Plan section (to be developed at a later date)

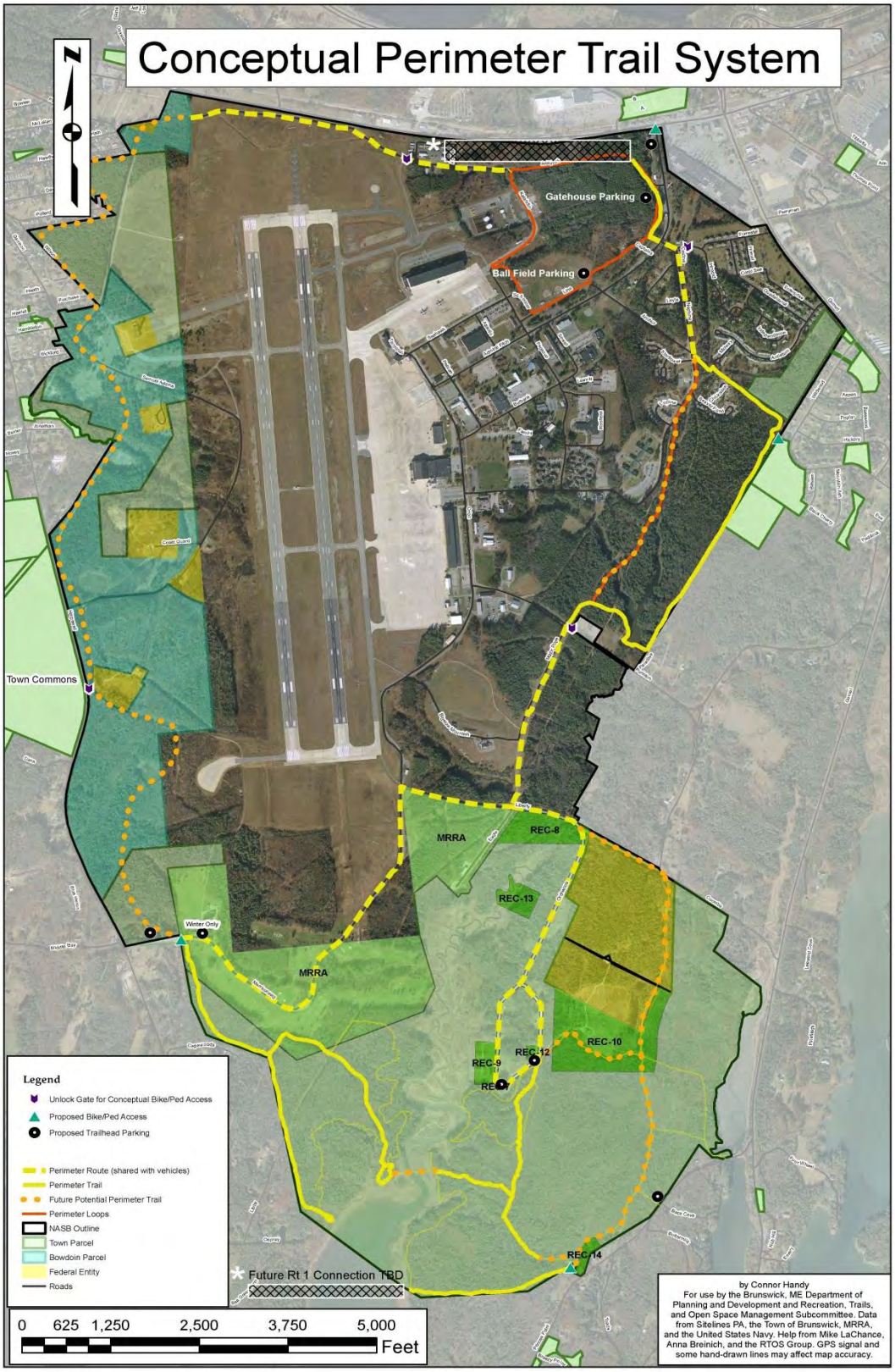
REC-11 Management Plan

Placeholder for REC-11 Management Plan section (to be developed at a later date)

66-Acre Parcel Management Plan

Placeholder 66-Acre Parcel Management Plan section (to be developed at a later date)

Perimeter Trail System Conceptual Plan



Background

Throughout the Base reuse planning process there was a call for a "perimeter trail". This is shown conceptually on Reuse Master Plan documents, as a trail or trails around the edges of the property, often coinciding with the Navy's perimeter road. Use by bicyclists, walkers and joggers has been envisioned.

In November 2011, the Town of Brunswick convened a stakeholder group charged with creating a "Recreation, Trails and Open Space Management Plan" for lands to be conveyed to the Town of Brunswick. The stakeholders' work included consideration of a perimeter trail. Stakeholders acknowledge that the perimeter trail involves multiple landowners: Town of Brunswick, Bowdoin College, Midcoast Regional Redevelopment Authority (MRRA), Schott Management, and the US Military (Navy, Armed Forces, and Maine Army National Guard). Creation and maintenance of a perimeter trail will be a coordinated effort among all affected landowners.

The conceptual illustration of a perimeter trail in the BNAS Reuse Master Plan shows a meandering trail around the entire base property, including crossing the estuary created by Mere Brook. Field observations reveal a very broad and substantial estuary with a channel in the middle and many acres of salt marsh grasses. At the southern boundary the marsh is approximately 1/3 mile wide. The width decreases steadily in a northerly direction but is still quite substantial at the south end of the bunkers (approximately 1000 feet). Crossing the estuary with a perimeter trail bridge is not out of the question, but will require significant environmental and economic consideration. Another significant factor in creating a continuous loop perimeter trail in the southern part of the Kate Furbish Preserve (REC-7 property) is that about one third of the former perimeter road on the east side (off of Coombs Road) is now part of a Joint Armed Forces Reserve Center and is off limits to public use. Therefore the current conceptual plan for the perimeter trail is to use the road to the bunkers and then construct a new trail that would intersect with the old perimeter road at the property's southern boundary.

Near-Term Opportunity

A nearly traffic-free trail exists on the ground today and can be opened to non-motorized use with little expense or effort. Connecting the Town Commons/Quebec Gate on the west side to Merriconeag Road on the east side is a continuous perimeter trail around the northern half of Brunswick Landing. Although not a completely traffic-free perimeter trail loop as envisioned in the BNAS Reuse Master Plan, this proposal provides a low-cost, near-term step to better integrate the former Naval Air Station with the Town and build support for the improvement and expansion of the perimeter trail. With a few signs and the opening of several 'people gates' in the existing fencing, bicyclists and pedestrians can be using the trail almost immediately. The proposed management framework would provide the basis for completing and improving the perimeter trail loop.

Description

The trails group of the stakeholder committee visited the former base over 20 times to carefully look at the existing situation, with a focus on Kate Furbish Preserve (the 591 acres south of the airport which will be Town open space land). In addition to walking the Kate Furbish Preserve land, the trails group also drove, biked and walked potential locations for a perimeter trail. These field investigations resulted in a recommended perimeter trail.

For the most part, the proposed perimeter trail from the golf course north and looping clockwise all the way to Purinton Road is traffic-free. Some sections are paved and some are not. A few sections are "public roads" (regular use by vehicular traffic) while many sections are "shared-use roads" (infrequent vehicular traffic such as for maintenance purposes). In the future, wherever possible, the perimeter trail should be moved to a trail-only location, separate from vehicular traffic.

Described below is the recommended perimeter trail location, in a clockwise direction, starting at the main gate at Fitch Avenue. There are two connected loops, one entirely north of Kate Furbish Preserve, the other mostly within Kate Furbish Preserve. Sections which are currently on-road are considered an off-road "gap" with a suggestion for how to move to an off-road trail.

This recommendation is made with full awareness that the landowners may want or need to move the trail in the future, depending on future development, provided that connectivity and design standards are retained. Specifically, at the time of the preparation of this plan, Bowdoin College has not yet undertaken their own planning process for the property that they will own west of the airport so the route described below assumes use of existing roads even though it is very possible that will change.

Perimeter Trail System

- From the corner of Allagash & Fitch Avenue follow Fitch Avenue to the rail trail (old RR bed that has been paved). This section is paved.
- Rail trail south to Forestal. This section is paved.
- East on Forestal to south on public access easement along Neptune. This section is paved. Gap: an off-road trail needs to be constructed parallel to Neptune, in the access easement.
- Neptune trail easement to Anchor/First.
- East on Anchor/First to old perimeter road. This section is paved.
- Old perimeter road south to just north of Purinton (at picnic area).
- Around picnic area on dirt road to Purinton.
- South along Major Pope to Liberty. This section is paved. Gap: move route off road to parallel dirt road or create new side path along Major Pope.
- Major Pope 'side path' south to Liberty.

- At Liberty, there are two options: 1=shorter loop, all north of Rec 7. 2=Rec 7 loop.
- OPTION 1: North of Kate Furbish Preserve
  - Follow Liberty west to Merriconeag. This section is paved. Gap: move route off road to dirt road through MRRA property or create a new side path along Liberty
  - Follow Merriconeag south and then west to west edge of golf course. This section is paved. Gap: create new side path along Merriconeag.
- OPTION 2: Kate Furbish Preserve
  - At Liberty turn east to Ordinance Road. This section is paved. Gap: create side path along Liberty.
  - Follow Ordinance Road south to bunkers. This section is paved.
  - Along the eastern side of the Ordinance Road loop, leave Ordinance Road to travel south on a new trail. Gap: build a new trail that intersects the old perimeter road along the south boundary. Follow the perimeter trail along the boundary to the marsh, or turn west off of the new trail to head towards the marsh where a crossing/bridge might be built to join with an existing trail on the west side of the marsh.
  - At the west side of the marsh, turn north along an old road bed, which briefly crosses golf course property and then intersects with the old perimeter road along the western boundary.
  - At the intersection of the perimeter road with the trail described above, the perimeter trail turns north to join Merriconeag Road or south following the old perimeter road that ends at the marsh.
  - Turn north at the intersection of Merriconeag Road and the western property boundary. Gap: a new trail will have to be constructed on Town land to Bowdoin land. Until that is possible, use Harpswell Road to fill the gap.
  - Follow existing dirt perimeter road north through Bowdoin land. At one point this road crosses airport property (may need Federal Aviation Administration sign-off). The road continues north, following the western property line for a while and continues north through Town land (near “zigzag” boundary) and into Bowdoin land again at northwest corner.
  - At north boundary, follow old perimeter road (Allagash) parallel to Bath Road and then back to rail trail along Fitch Road. This section is paved.
  - The loop north of Kate Furbish Preserve is approximately 8 miles.

Shorter Loops for Walkers and Families

Since the perimeter trail north of the Kate Furbish Preserve is approximately 8 miles, two other shorter loops are recommended for those looking for a shorter trail. This will appeal to walkers and family bicyclists providing both a hard and soft-surface experience. One suggested loop is paved and utilizes the old railroad bed which is now a paved trail paralleling Fitch Avenue from near the main gate to Pegasus. The loop then includes Pegasus to Katahdin to Allagash (the perimeter trail) and back to the beginning. The second loop is largely unpaved and takes

advantage of the par course trail (and/or pipeline trail which is adjacent and parallel) and the old perimeter road along the northeast boundary, with First/Anchor Street connecting the two.

In the Kate Furbish Preserve, there are several loops that include the perimeter trail as well as footpaths that connect segments of the perimeter trail.

Bicycle / Pedestrian Gates

There are several gates/fences along the recommended route which will need to be opened/removed or 'set ajar' to accommodate bicycle and pedestrian access.

Access Points

In the BNAS Base Reuse Master Plan, a number of neighborhood bicycle/pedestrian access points were envisioned. These would be places where local people could walk or ride a bike onto the perimeter trail. No parking would be accommodated in these locations. In many cases, allowing access will require creation of openings in fences and/or opening of gates.

Parking

While neighboring users of the perimeter trail will walk or bike from home, others will drive in order to access the trail. Small parking areas (2-10 cars), most already existing, are recommended for several locations including: near main gate at Fitch Avenue at the location of the former gatehouse, ball field off of Fitch, in vicinity of Quebec Gate, golf course lot (winter only), Town land near Middle Bay and Harpswell Road, south end of road to bunkers (dispersed along the road), Picnic Pond and Princes Point Road (create new parking where Town property abuts the road).

Cooperative Management

The stakeholder committee recommends development of a memorandum of understanding (MOU) among trail landowners for cooperative management of the perimeter trail. Elements of the MOU might include:

- Location
- Allowed users
- Minimum use is walking/jogging and hybrid bicycles
- Design standards (exists for Brunswick Landing, may need modification)
- Sign design and guidelines (exists for Brunswick Landing, may need modification)
- Rules for use
- Parking
- Neighborhood access
- Maintenance standards and responsibilities
- Policing

On-going Management, Stewardship and Funding

Oversight

The Town of Brunswick Department of Parks and Recreation is responsible for the ongoing management of the public benefit conveyance properties. Input and assistance from the Recreation and Conservation Commissions will be important for management success.

Outreach and education

Staff and volunteer stewards can encourage public understanding, appreciation and support for long-term protection and management of the Kate Furbish Preserve by:

- providing opportunities for community volunteers and students to engage in resource management activities,
- providing opportunities for community volunteers and students to participate in educational activities,
- conducting targeted outreach to neighbors adjacent to the Preserve to prevent infractions of preserve rules, boundary infringements or unauthorized trail building,
- installing selected informational signs and wayside exhibits,
- providing educational brochures such as self-guiding nature trail booklets, and/or talking informally with recreational users met on the Preserve trails, and
- Interpretive messages should focus on the importance of protecting this special property.

Budget and Funding

Maintenance costs for the former BNAS properties conveyed to the Town of Brunswick will be supported through the Town of Brunswick Department of Parks and Recreation's annual budget. The Department will pursue funding through grants and will continue to rely on volunteer labor for small projects. For larger projects, grants and / or budget allocations will be needed.

Actions:

- Develop costs estimates for the implementation of actions identified in this management plan.
- Develop a fundraising plan and timeline for identified actions. Funding sources will include annual town budget requests, grant funding, and private donations.

Acknowledgements

We wish to express our appreciation to the following individuals who served on the Stakeholder Committee, attended meetings, conducted field assessments, researched and contributed to the concepts presented in this Recreation, Trails and Open Space Management Plan.

Denise M. Clavette, Town of Brunswick, Project Leader

Tony Barrett, East Coast Greenway Alliance

Anna Breinich, Town of Brunswick, Planning and Development

Amanda Bunker, Brunswick Conservation Commission

Dan Devereaux, Town of Brunswick, Marine Resources

Rebecca Farnum / Colleen Fuller, Access Health

Tom Farrell, Town of Brunswick, Parks and Recreation

Gerald Favreau, Brunswick Town Councilor, District 5

Catherine Ferdinand, Bowdoin College

Charlie Frizzle, Brunswick Planning Board

Kristi Hatrick, Brunswick Recreation Commission

Julie Isbill, National Park Service

Bruce Kidman, Property Abutter and The Nature Conservancy

Fred Koerber, Brunswick School Department

Benet Pols, Brunswick Town Councilor, At-Large

Bob Rocheleau, Midcoast Regional Redevelopment Authority (MRRA)

Kurt Stinson, Conservation Commission

Steve Trockman, Mid Coast Hospital

Angela Twitchell, Brunswick Topsham Land Trust

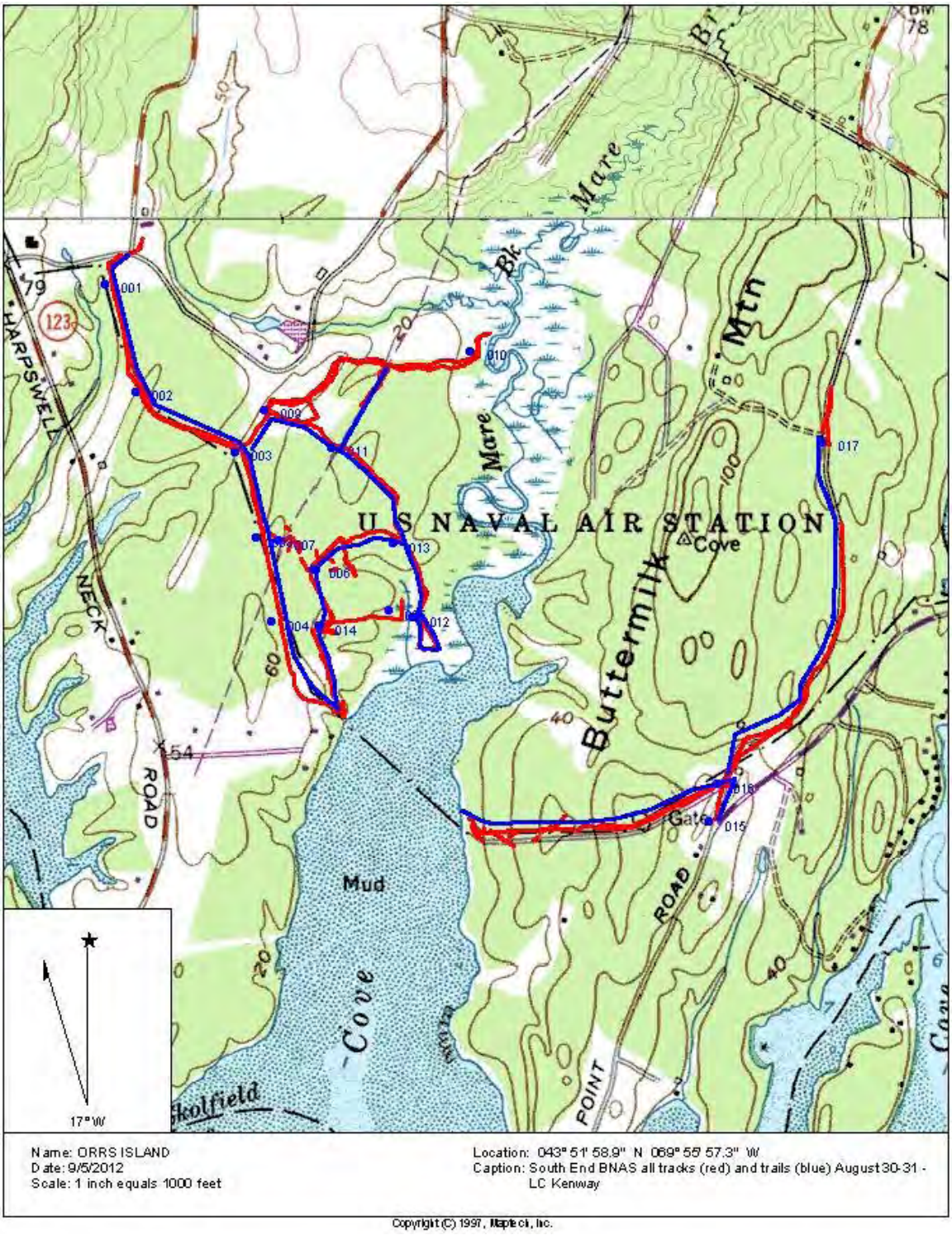
Steve Walker, Brunswick Planning Board and Maine Department of Inland Fisheries & Wildlife

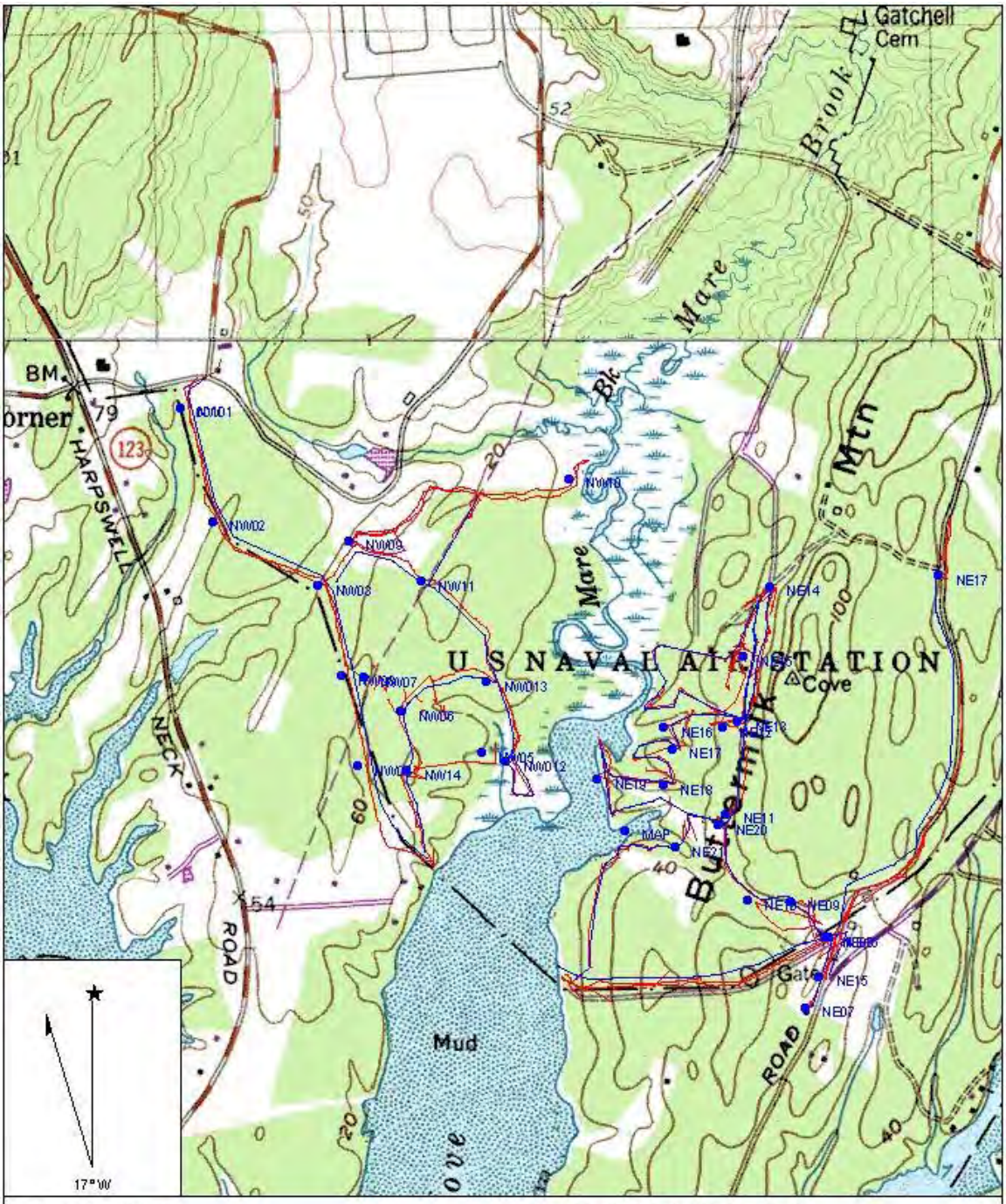
Suzan Wilson, Brunswick Town Council Chair, District 3

Jeff Ward, Brunswick Recreation Commission

Appendix

Figure 1: Trail maps and report by Trail Services, Lester Kenway





Name: ORRS ISLAND
Date: 11/8/2012
Scale: 1 inch equals 1000 feet

Location: 043° 52' 08.0" N 069° 56' 05.3" W
Caption: BNAS Trail Explorations - Red lines are GPS tracks. Blue lines are suggested trail routes - LCKenway - 11/8/12

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Trail Services
Lester C. Kenway
15 Westwood Road
Bangor ME 04401

Telephone: 207-947-2723
Fax: 207-945-6050
trailser@myfairpoint.net

November 8, 2012

Thomas M. Farrell, Director
Parks and Recreation Department
30 Federal Street
Brunswick, Maine 04011

Dear Tom:

Thank you for inviting me to review some of the proposed trails in the BNAS Rec7 area.

I have enclosed the following:

- A general description of the Trail Sections I reviewed.
- A map of all of my GPS tracks – red shows all tracks, blue shows the proposed Trail Sections.
- A spreadsheet that itemizes work to be done and estimated costs.
- A file of all Western GPS Waypoints (Red Line)
- A file of all Eastern GPS Waypoints (Red Line)
- A file of all GPS tracks – Red Lines
- Files for 3 proposed trail locations (Blue Line)

All Trail Sections are flagged at eye level with blue flagging.

Notes and Observations:

Section 1 – Southwest Boundary Road – 4947 Ft.
This Road follows the boundary fence along the Southwest edge of the BNAS property from the golf course to Harpswell Cove. The road surface is grassed over and very firm – It is possible to drive the entire section with a passenger car. I would suggest that we mow the road and use it as is. Clearing would be of 3 types:

- Bush Hog mow the entire road – 2 passes – once or twice each year
- Mow the edges with a Ditch and Bank Mower – once every 3 years
- Clear the edges and overhead (arborist or similar) – once every 10 years

This section of road is most appropriate for a shared use trail without extensive surface treatments.

There is at least one rusted out culvert – maybe more
There is a concrete culvert that needs to have the inlet cleared out.

There is a patch of "knotweed" that needs to be removed.

There is one wet area that could be upgraded by spreading 6" of screenings (3" stones) to fill in the low area that would then be covered with 2" screen gravel

There are two homes visible to the south of the trail. If a major development should occur, rendering the location less desirable for a trail, we would have made a minor investment in the trail, making it easier to close or abandon the route. While development may reduce the quality of the hiking trail, usually a trail close to residential areas increases recreational opportunity and home values.

The end of the road at Harpswell Cove offers nice views of the water. This could be enhanced by extending a 4 ft wide natural surface trail closer to the waters edge. Modest clearing of hardwood limbs would improve the view.

Section 2 – Southwest Boundary Rd to Golf Course to (Harpswell Cove) – 3515 ft.
This Road is more overgrown than the SW Boundary Road. The entrance from the Golf Course is so overgrown that it is not obvious to be a road. We can restore this road to be used as a shared use trail with similar mowing work:

- Bush Hog mow the entire road – 2 passes – once or twice each year
- Mow the edges with a Ditch and Bank Mower – once every 3 years
- Clear the edges and overhead (arborist or similar) – once every 10 years

The Road surface is softer than the SW Boundary Road. There is a set of wheel tracks – 8" deep the full length of the road. This would be a hazard for bikes, and inconvenient for hikers. I suggest that both of these tracks be packed full with gravel, and the road be closed during the wet times of the year. This road could be good for a shared use trail if traffic is limited to the dry times of the year.

The shore line area was the nicest part of the property that I got to visit. There is a large level area shaded by big pine trees. Aside from clearing a 4 foot wide natural surface trail (cul-de-sac) very little clearing would be required to offer views of the Cove. It would be attractive to think of linking the two roads to form a larger shared use trail. This would require major and costly construction of a new road between the two.

This trail intersects the Petroleum Pipeline. To the north, it leads 850 feet to the Golf Course. The route is partially grown over with trees and is quite rough terrain. The lower 100 feet is hydric, or wet soils that would require ditch and drain construction for a trail. I would recommend a 4 ft wide, natural surface trail in this area. Note that the Pipeline South becomes very wet, with the character of a winter logging road.

Section 3 – The Road Goes through the woods from the Southwest Boundary Road to the Golf Course to Waterfront Road – 2397 Ft.
Most of this trail route is through Balsam Fir trees with larger Pine, Birch and Spruce. Extensive channels are avoided to create a reasonable route. Final route is good quality with few or small wet areas. It is deflected west by long channels that flow into the ocean water.

This route will be best as a 4 ft wide natural surface trail.

During part of my exploration I flagged a route that goes closer to the water. This route parallels the Golf Course to Waterfront trail along an interesting series of marshes and gulleys and has a view of the Cove. I am not sure it is of sufficient interest, but I have left the flagging up.

Section 4 – Southern Boundary Road from Princess Point Road – 2468 Ft.
This road follows the southern fence of the BNAS

This road appears to have a firm base, but is very grown over with young conifers, 1 to 3 inches in diameter and up to 12 feet tall. These small trees can be cleared with a chainsaw or with a Bush Hog mower. In any case, this will leave stumps or shattered stumps across the road way. Machine work would include:

- Bush Hog mow the entire road.
- Mow the edges with a Ditch and Bank Mower – once every 3 years
- Clear the edges and overhead (arborist or similar) – once every 10 years

The surface could be restored by spreading and shaping 2" screen gravel across the roadway.

Some drainage should be improved. 1 culvert needs to be replaced (maybe more) and 1 more drainage dip should be added. This road could make a shared use or multi use trail, with the reservation that it has several steeper areas that will be more difficult to maintain.

There is a view of the Cove at the end of the road. There is also a view of one of the homes that is visible from the Southwest Boundary Road. This might be too short a ride for bicycles. It may best serve as a hiking trail.

Section 5 – The Road goes north from Princess Point Road to a Fence – 3522 Ft. Orange not Yellow.
I surveyed this road after not finding the middle road on this peninsula. It was good walking, and I did not spend a lot of time on this road that was not included in phase 1. The road would make a good location for a shared or multi use trail. It also provides an additional comparison of what it will take to convert an old road to a shared use trail.

The road has a firm base except for a 700 ft section near the beginning and another 200 section near the north end. These areas could be improved with new culverts, and could also be improved by spreading 6" of screen gravel over woven geotextile.

This road is also overgrown with young conifers, 1 to 3 inches in diameter and up to 12 feet tall. These small trees can be cleared with a chainsaw or with a Bush Hog mower. In any case, this will leave stumps or shattered stumps across the road way. Machine work would include:

- Bush Hog mow the entire road.
- Mow the edges with a Ditch and Bank Mower – once every 3 years
- Clear the edges and overhead (arborist or similar) – once every 10 years

The surface could be restored by spreading and shaping 2" screen gravel across the roadway.

The road is bordered by ledges on both sides for long distances. There may be historic interest in the building of the road, either with the use of explosives, or by building the road bed over ledge sections.

This trail presently has no access from the North. This would be a good opportunity if there was access through the fence and people could ride through the old base on gravel and paved roads. It may not have enough "time in the saddle" for a shared use trail.

Section 6 – The Middle Trail
This trail branches off the two perimeter Roads near Princess Point Road and heads north through the property. It is not a constructed road. I relocated several hundred feet to avoid a flooded area at the southern terminus. Much of the road is deeply rutted with puddles. The northern third is only through the woods with little evidence of a trail. I would not consider it for a shared use trail. The wet ruts are problematic since they tend to draw water into the trail even if it were to be filled. I think it would be more successful to develop this as a 4 foot hiking trail offset and parallel to the original route. Cost to clear would be $2296 which would be a fraction of the road building cost.

The Ledges Trail
This trail has been previously flagged. It goes up and down across a ledge shelf. It becomes concurrent with the Middle Trail. It could serve as the northern route of the Middle trail. It requires very little work. I would suggest that a more interesting hiking trail could be located up on the ledges of Buttermilk Mountain.

Section 7
There is a very interesting series of headlands along the eastern edge of the Estuary in the middle of the BNAS property I have given them temporary names north to south:

Shoreline Grove	**2048 Ft**
Freshwater Pond	**998 Ft**
Point near Water	**1029 Ft**
T-Point	**2613 Ft**
Deep Cove	**831 Ft**
Southern Shoreline and Woods	**1117 Ft**

This area offers some of the best scenery and destinations for visitors. Shore land birds can be viewed in many areas. Each feature is separated by an inland channel. This geography limits the trail interaction with the riparian areas. Trail manuals and trail designers have long practiced intermittent trail locations in riparian zones to minimize negative impacts on wildlife and their habitats. Riparian areas have more diversity of wildlife than most other areas. This trail layout is very favorable for wildlife.

A valuable resource for wildlife work is:
Planning Trails with Wildlife in Mind
http://www.fs.fed.us/outdoors/naturewatch/start/planning/Trails-for-Wildlife-Handbk.pdf

The Southern Shoreline has limited coastal trail location for the following reasons:
There is a very fine view of the water where the boundary road meets the shore.
The brush is very thick along 1000 feet of the coastline.
Game trails and other openings were available to make a nice trail inland.

I have assembled a lot of information for you. It is likely that there have been some minor omissions. Please let me know if you need any clarifications.

Sincerely,

Lester C. Kenway
Trail Services

Southern BNAS trail survey 8/30-11/8/2012 - LC Kenway

Distance Feet	Waypoint	Description	Project	Hours Labor	Machine Hours	Rate	Materials	Cost
Section 1 Southwest Boundary Road - 4947 Ft.								
0	**NW01**	Edge of Golf Cart Path						
		Road bed is in good condition	Bush Hog length of Road - 2 passes		1	65		$65.00
			Ditch/Bank Mow length of Road Both sides		1	65		$65.00
			Side and Overhead Clear Road	8		40		$320.00
1036	**NW02**	Rusted out Culvert	Replace culvert		4	85		$340.00
			18" x 20 ft PVC Culvert				18" 20 ft PVC	$303.20
1250		Water running in wheel tracks Source of water from marsh	Add drainage dip = 12" x 6 ft		2	85		$170.00
1553		Note house to right						
1952		30" concrete culvert	Clear inlet		1	85		$85.00
2145	**NW03**	Knot weed patch Jct road to golf course	Eradicate	40		17		$680.00
3727	**NW04**	3 pink stripes on a tree Wet hole for 30 feet			1	85		$85.00
			3" screenings				10 yds 3" stone	$130.00
4763		End of Road	Gravel surface				15 yds 2" grave	$130.00
4898		Continue to View of Water Note house to right						
							Total	**$2,373.20**
Section 2 SWB Road to Golf Course to Waterfront 3515 Ft.								**.48/ft**
	NW03	Jct with SWB Road and road to Golf Course	Bush Hog length of Road - 2 passes		1	65		$65.00
			Ditch/Bank Mow length of Road Both Sides		1	65		$65.00
347		Mowing piles						
461	**NW09**	Edge of Golf Course Did not find road right away and walked along edge of Golf Course along endge of Golf Course	Side and Overhead Clear Road	8		40		$320.00
Pipeline to Golf Couse 850 ft.	**NW11**	Cross Petroleum Pipeline Explored Pipeline Pipeline is partially grown up with Trees, ground is uneaven	Recommend a 4 ft wide natural Surface trail through this area Not sure of value of this trail					
		Lower portion near gold course is Hydric - wet soils As you follow the Pipeline West it becomes very wet - like a winter Road	Clear Trail	35		17		$595.00
			100 Ft Ditch and Drain	2		85		$170.00
		Note wet wheel tracks No machinery except during Driest season	Fill Wheel Tracks with 2" gravel		18	45		$810.00
							260 yards 2" G	$2,210.00
	NW12	Laid out Cul-de-Sac - nice area big pine, shore birds, Views	Clear natural Surface Trail - 4 ft wide 860 Feet	35		17		$595.00
							Total	**$4,830.00**
Section 3 Through wood from SWB to GC to Water-front - 2397 Ft								**1.37/ft**
	NW13	Jct of woods Tr. to Section 2 road	Clear 4 ft wide natural surface trail	110		17	**Total**	**$1,870.00**
	NW04	Near Jct of woods tr. and Section 1 Road Trail runs through dense Balsam Fir with eroded channels to avoid Final route is good quality with very few or small wet areas						**.78/ft**
Section 4 Southern Boundary RD from Princess Point Road 2468 Ft.								
	NE15	Princess Point Road	Bush Hog Road		8	65		$520.00
	NE16	Fence and Gate	Ditch and Bank Mow Road		5	65		$325.00

			Both sides					
			Overhead and Side clear		8	40		$320.00
			6" layer of 2" screen gravel		40	45		$1,800.00
							550 Yds 2" gr	$4,675.00
			Shape with York Rake		8	65		$520.00
		18" culvert needs replacing	Replace Culvert		4	85		$340.00
							18" 20 ft PVC	$303.20
		100 ft of erosion on a hill	Add Drainage Dip		2	85		$170.00
							Total	**$8,973.20**
Section 5 - Road North From Princess Point Road to Fence - Orange not Yellow 3522 Ft.								**3.64/ft**
	NE16	Fence and Gate						
		700 feet of alders and wet ground	700 ft Geotextile w/ 6" gravel		4	20		$80.00
				16		17		$272.00
							700 ft GTx12	$840.00
			Bush Hog Road		12	65		$780.00
			Ditch and Bank Mow Road		12	65		$780.00
			Both sides					
			Overhead and Side Clear	10		40		$400.00
		Replace 18" culvert			4	85		$340.00
							18" 20 ft PVC	$303.20
		Replace 18" culvert			4	85		$340.00
							18" 20 ft PVC	$303.20
		200 feet of alders and wet ground	200 ft Geotextile w/ 6" gravel				200 ft GTx12	$240.00
			Spread 6" gravel along road		60	45		$2,700.00
							780 Yds gravel	$6,630.00
			Shape with York Rake		12	65		$780.00
							Total	**$14,788.40**
	NE17	Corner of 10 feet barbed wire fence.						**4.19/ft**
Section 6 - Middle Trail Princess Point Road to Fence - 7671 ft	**NE08**	Start of Middle Trail	Recommend building a trail parrallel to the old road for foot travel only - 7671 ft	310		17		$5,270.00
	NE09	16+8+8 channel wet						
	NE10	Jct relo - 20 ft wet						
	NE11	Pink Chair						
	NE13	Start Ledges Trail						
	NE14	Near Fence						
Section 7 North to South								
Shoreline Grove		2048 ft	Clear 2048 ft. hiking trail	82		17	N/A	$1,394.00
Freshwater Pond		998 ft	Clear 998 ft. hiking trail	40		17		$680.00
Point near water		1029 ft	Clear 1029 ft. hiking trail	45		17		$765.00
"T" Point		2613 ft	Clear 2613 ft. hiking trail	105		17		$1,785.00
Deep Cove		831 ft	Clear 831 ft. hiking trail	34		17		$578.00
Southern Shoreline and Woods		1117 ft	Clear 1117 ft. hiking trail	45		17		$765.00
	NE15	10 ft crossing						
	NE16	Green Freshwater Pond						
	NE17	50 Feet Side hill needed		25		17		$425.00
	NE18	Cross Stream Channel						
	NE19	Shore						
	NE20	3x st long						
Section 8 The ledges Trail 1057 Ft			Clear 1057 ft hiking trail	42		17		$714.00
							Total	**$12,376.00**
								0.76/ ft
							Grand Total	**$45,210.80**

Figure 2: Trail Design Guidelines for BNAS Conservation District

Trail Design Guidelines for BNAS Conservation District

Facility Type	Reuse/New	Surface	Dimensions
Access Road[1]	Utilize existing roads	paved or gravel	existing
Shared-Use Path[2],[3]	Utilize existing & abandoned roads. Some new construction where needed.	paved or gravel	12' x 12' cleared
Footpath[4]	Utilize existing roads, abandoned roads, utility corridors & footpaths. Some new construction where needed.	natural	4' x 8' cleared

[1] Town of Brunswick road Ordinances and/or MRRA Community Design Guidelines for roads

[2] FHWA Trail Guide – Design guidelines for shared-use paths

[3] Maine Trails Manual – Guidelines for Recreational Trail Construction in Maine. 2002 (or latest edition) – Design guidelines for shared-use paths and footpaths.

[4] Appalachian Trail Design, Construction and Maintenance, 2nd edition 2000 (or latest edition) --- Design guidelines for footpaths.

Figure 3: Reference Guidelines for Facility Design Guidelines for BNAS Conservation District

Reference Guidelines
Facility Design Guidelines for BNAS Conservation District

Facility Type	Description	Comments
Parking	Up to two parking areas within the District utilizing existing roads and/or altered, leveled ground near existing roads.	Encourage non-motorized transportation to the District. Provide bicycle racks. Encourage dispersed, small (2-3 cars) roadside parking along the perimeter trailheads outside the District.
Bridges	Longer than 20 feet and more than five feet above water.	The National Park Service requires bridges longer than 20 feet and more than five feet above water are professionally engineered. Shorter and lower bridges will use natural materials and be considered trail elements.
Kiosks, benches, toilets & shelters	To be determined	Natural materials/rustic design vs. more urban contemporary designs in the MRRA guidelines.
Signage	Roads[1] Shared-use paths [3,5] Footpaths [3,4]	Consistent 'look' with other similar trails in Brunswick or the region
Docks	Viewing platforms and docking of small boats.	May need to look outside the District for suitable location with close road access needed for launching of small boats.

Reference Guidelines

[1] Town of Brunswick road Ordinances & MRRA Design Guidelines for signage

[2] FHWA Trail Guide – Design guidelines for shared-use paths

[3] Maine Trails Manual – Guidelines for Recreational Trail Construction in Maine. 2002 (or latest edition) – Design guidelines for shared-use paths and footpaths.

[4] Appalachian Trail Design, Construction and Maintenance, 2nd edition 2000 (or latest edition) --- Design guidelines for footpaths.

[5] Manual on Uniform Traffic Control Devices (MUTCD), FHWA, 2009 (or latest edition)