

WHEELER NATURE PARK

MANAGEMENT PLAN



Prepared for the
City of South Burlington
by the South Burlington Natural Resources Committee
May 2015

Wheeler Nature Park
Management Plan
South Burlington, Vermont 05403

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REVISION HISTORY

05/06/2015 – Initial version of report approved by Natural Resources Committee

EXECUTIVE SUMMARY

Wheeler Nature Park (The Park) is located southeast of the intersection of Dorset and Swift streets in South Burlington, Vermont. It was acquired by the City of South Burlington in 1992 and is approximately 110 acres in size. The Park consists of mixed forest, grasslands, shrublands, wetlands, approximately 2 miles of walking trails, a tree nursery and The Homestead. The Park also offers potential uses for agriculture, education and recreation for the residents of South Burlington.

The natural area provides benefits to the flora, fauna and residents of South Burlington on many levels. However, The Park faces a multitude of challenges that range from non-native invasive species to overuse by the visitors. To address the challenges, the South Burlington Natural Resources Committee (SBNRC) has prepared this Management Plan, providing a comprehensive set of guidelines, ensuring that all will enjoy The Park. These guidelines will manage the current use and help to guide the future use of The Park.

It is important to understand that The Park is separate and distinct from Veteran's Memorial Recreational Area, as the permitted uses of the two properties are subject to their own individual guidelines.

Relevant South Burlington ordinances apply to The Park. In addition, the SBNRC has included recommendations for the future use and maintenance of The Park.

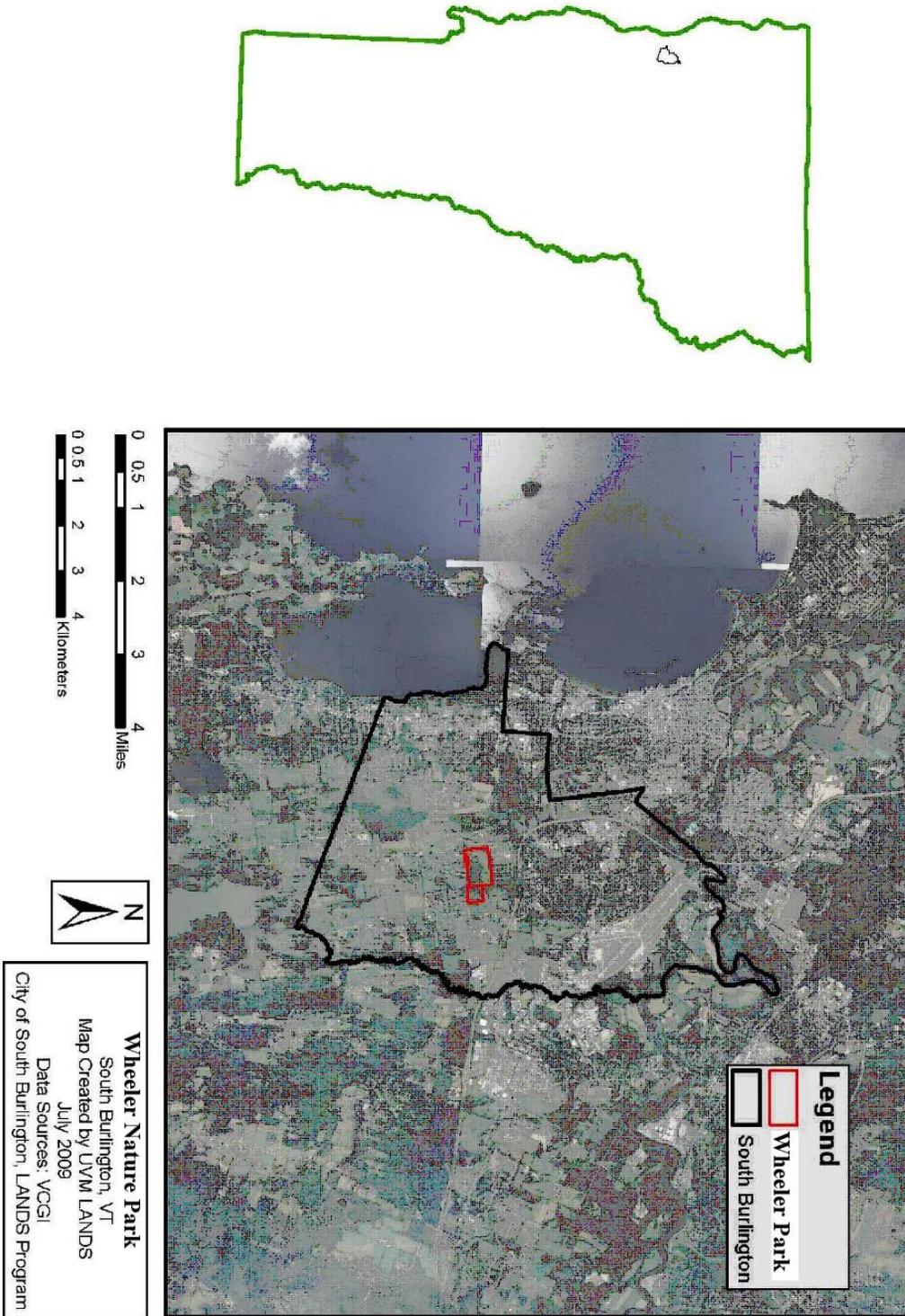
The SBNRC's objective for this Management Plan is to:

- Provide the background, history and overview of the land.
- Identify opportunities and address challenges including permitted and restricted uses consistent with South Burlington parks ordinances.
- Implement goals and objectives to:
 1. Ensure the viability of the management areas (Core Forest, Peripheral Forest, Wetlands and Streams, Grasslands, Shrublands, and The Homestead) and wildlife found in Wheeler Nature Park through the combination of active management and natural processes.
 2. Provide a place where visitors can enjoy nature through passive recreation that is compatible with the other management objectives of Wheeler Nature Park.
 3. Improve the Potash Brook watershed through storm water retention and filtration, while adding to ecological richness of Wheeler Nature Park.

The Park Management Plan serves as a reference for anyone interested in The Park or involved in its management.

The SBNRC will review the Management Plan annually and update it every five years, with input from the community and approval of the City Council.

Map 1 - Wheeler Nature Park in Context



INTRODUCTION

Vision Statement

The SBNRC's vision for Wheeler Nature Park is to preserve, protect and respect this natural area.

History

In 1992, the City of South Burlington purchased the property, now known as Wheeler Nature Park (The Park), one of several natural areas purchased by the City. It has been referred to as "the green lungs of the City Center" (South Burlington Comprehensive Plan 2006). Over time, many individuals occupied and shaped the landscape. It has a rich history dating as far back as 5,000 – 7,000 years ago. Evidence of Native American activity, in the form of projectile points, dating back to that time period was found in The Park (Archaeology Consulting Team, Inc. 2003).

Circa 1800, the first European-American settler to the property, Rufus Crossman, constructed the original farmstead. In 1903, the City's Town Clerk and Treasurer, Herman H. Wheeler, constructed the existing three-story brick farmhouse, which served as his office and family home for nearly 40 years. In the mid-1940s, Rena Calkins purchased the property. The Homestead parcel has come to include the farmhouse and the surrounding 14 acres. It has hosted a number of organizations committed to providing education focused on promoting home, school and community gardening. The farmhouse is currently vacant.

In 2009, the City of South Burlington, in collaboration with the South Burlington Land Trust, commissioned a study of The Park by the University of Vermont LAND Stewardship Program. The purpose of the study was to provide a natural resource inventory and recommendations for the ongoing management of The Park. Consequently, the LANDS Report has provided a framework on which the SBNRC has developed this Management Plan.

Until recently, the Park has been informally referred to by various names, such as the Calkins Property or the Dorset Park Natural Area. In 2010, the SBNRC was charged by the City Council with recommending a suitable name. The SBNRC considered several historical references recognizing the proud history of the property, including Crossman, Wheeler, and Calkins. While each may be appropriate, the SBNRC unanimously believed that Wheeler most robustly reflected the property and the City's heritage, for the following reasons:

- Herman H. Wheeler constructed the three-story brick farmhouse on the property in 1903.
- Mr. Wheeler served as the City's Town Clerk, Town Treasurer, and representative to the Vermont Legislature. For at least some time, the farmhouse served as his office in these official capacities.
- The Wheeler family maintained ownership of the property for nearly 40 years.

The SBNRC also pondered a 'surname' that would reflect the land's intended use. They considered a variety of terms including: natural area, preserve, park, and gardens. The Committee unanimously wished to avoid both "natural area" and "preserve" out of concern that those terms would leave citizens feeling that the property was to be left unused and enjoyed only at a distance. This is not consistent with either the SBNRC's objectives or the input they received from a student survey of the community. The SBNRC feels that the term Nature Park best reflects the community's goal for The Park.

On February 22, 2011, the South Burlington City Council voted to formally name the area Wheeler Nature Park. For ease of reading within this document, Wheeler Nature Park is referred to as "The Park" and the 14 acre parcel around the farmhouse as "The Homestead".



SECTION 1: OVERVIEW OF THE MANAGEMENT AREAS

Wheeler Nature Park, through natural and human forces, has been altered considerably since the last ice age. These forces of change are likely to continue. This Management Plan is intended to give guidance and structure for the caretakers of the land through a series of goals, objectives and actions. The actions will change according to periodic site assessment, status of tasks, resources, and funding available.

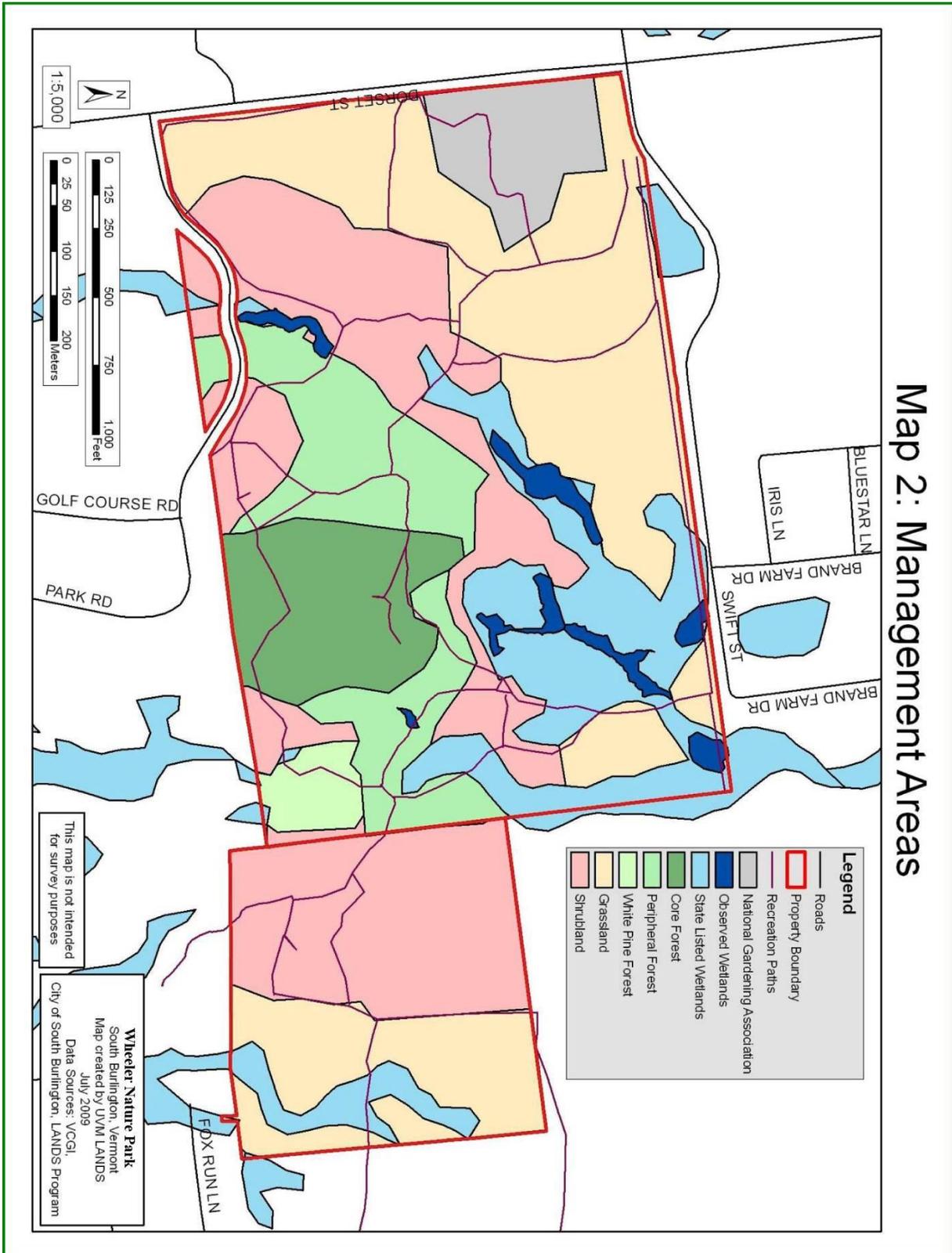
The LANDS Report of 2009 divides The Park into distinct management areas:

- 1) Core Forest
- 2) Peripheral Forest
- 3) Grasslands
- 4) Shrublands
- 5) Wetlands
- 6) The Homestead Parcel

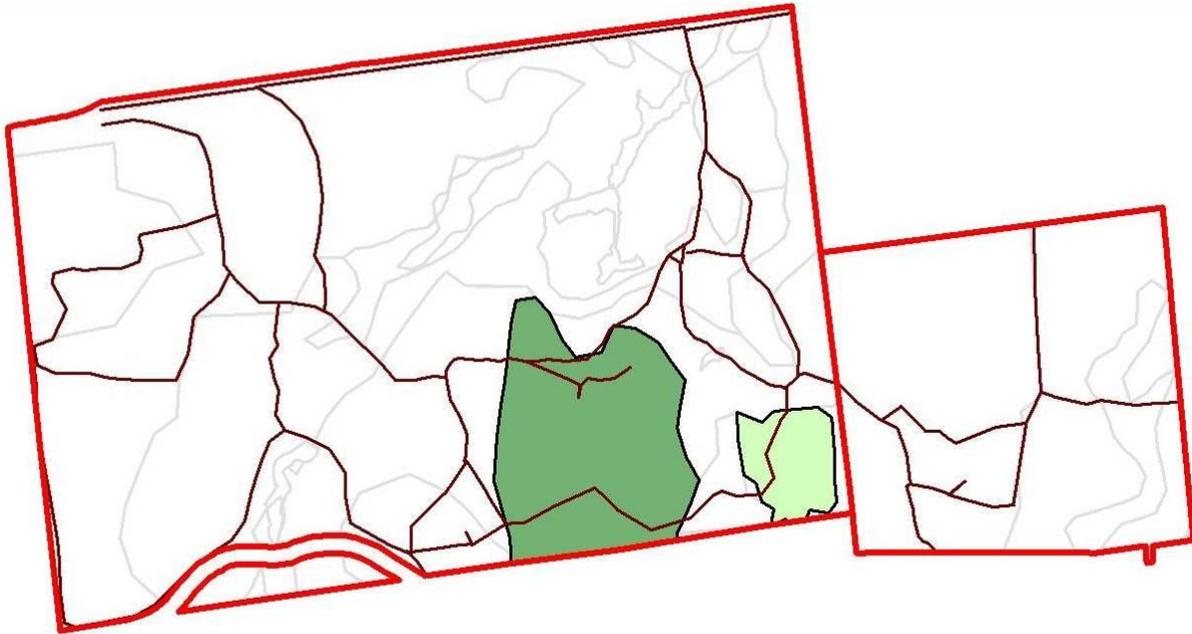
These designations correspond to the current cover type, soils (see Maps 2 & 3), and use, and are referred to accordingly throughout this Management Plan. This approach recognizes that The Park encompasses diverse ecological communities within the 110 acre property, and that each area warrants differing management strategies and care and use recommendations.



Map 2: Management Areas



Management Area 1:
Core Forest



The Core Forest of The Park is composed of two distinct forest stands: old sugar bush (dark green on Map) and a white pine stand (light green on Map). The Core Forest is distinguished from the Peripheral Forest by the land use history, the maturity of the trees, the relatively open understory, the steepness of the slopes on which they are found, and the vegetative groundcover of herbs and forbs.

The old sugar bush is relatively free of non-native invasive species (NNIS), and the white pine stand is undergoing the early stages of NNIS infestation. The Core Forest functions mostly as an even-aged stand. There are a number of very old sugar maples dominating the canopy. There are also pole-sized maples and maple seedlings. However, there are very few trees representing other age classes. The mature trees are characterized by numerous cavities, an important ecological attribute that many animal species depend on for shelter. During the breeding season, cavities offer shelter from predators and a refuge for raising young. In the winter, cavities offer protection from the elements. Snags (dead, standing trees) of varying heights are also a common feature in The Park. Snags are another important ecological feature for wildlife. The Core Forest has the highest diversity of herbaceous groundcover (herbs and forbs) in The Park.

Soils

Overall, soils in the Core Forest are rich and moderately rocky with some pockets of thick clay. More precisely, the soils are made up of Farmington extremely rocky loam (FaC), some Covington silt clay (Cv), and Vergennes clay (VeC/B). The soil of the white pine section of the Core Forest is exclusively Vergennes clay (VeC).

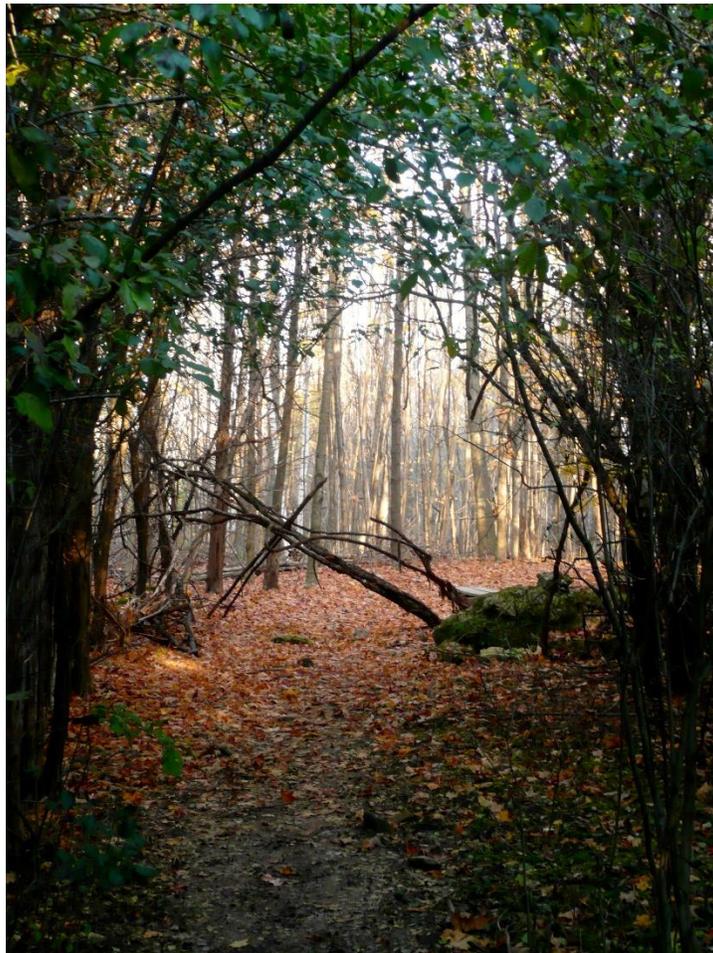
Current Land Cover Type

The south-central part of The Park is dominated by an even-aged stand of mature sugar maple (*Acer saccharum*) with a scattering of young sugar maple seedlings and saplings. Herbs

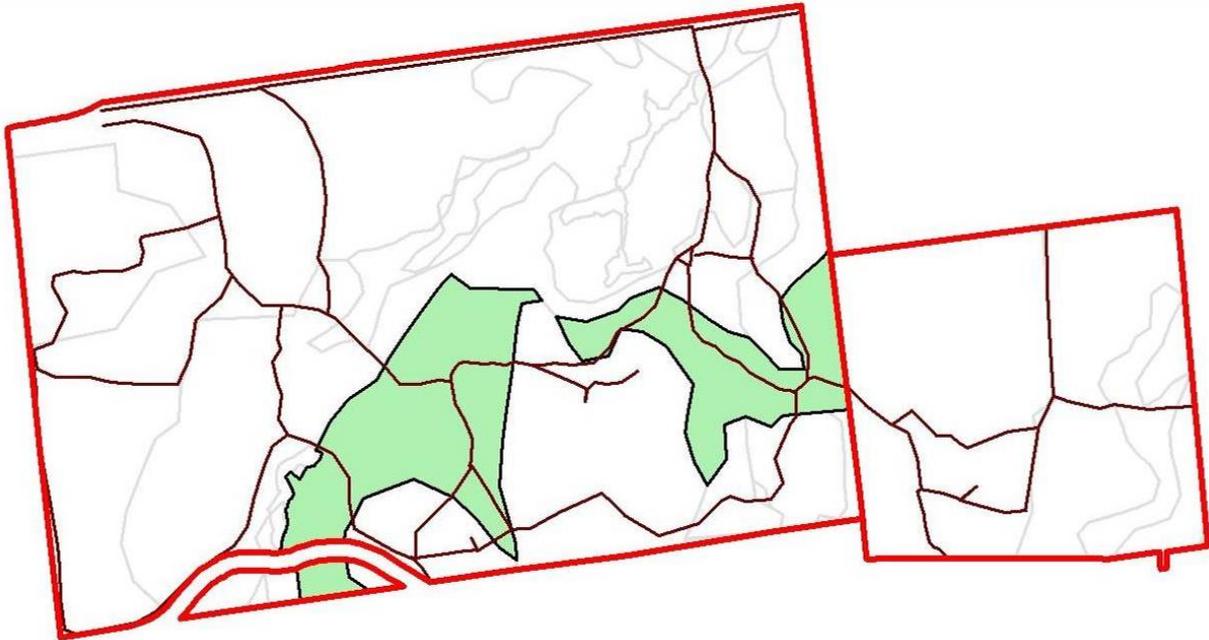
dominate the floor of the sugar bush. Few NNIS are found in the sugar bush. The southeastern part of The Park is dominated by a stand of Eastern white pine (*Pinus strobus*). Here, the forest is undergoing the early stages of NNIS infestation.

Natural Communities

The Core Forest has the highest ecological value in The Park. The sugar bush is comprised primarily of Rich Northern Hardwood Forest with pockets of Northern Hardwood Limestone Forest. The combination of calcium-rich bedrock and rich soils produce large trees and numerous rich-site herbs (Thompson and Sorenson, 2005). Post-agricultural succession often leads to pure stands of white pine which are eventually replaced by hardwoods (Thompson and Sorenson, 2005) indicating areas dominated by pine today would naturally become Northern Hardwood Forest. In this relatively intact hardwood forest, Hitchcock's Sedge (*Carex hitchcockiana*), a state-listed plant, has been identified. Under the Vermont Endangered Species Law, it has an S3 classification, meaning it is uncommon and at moderate risk of extinction or extirpation due to its restricted range and its relatively few populations or occurrences across Vermont (www.vtfishandwildlife.com).



Management Area 2:
Peripheral Forest



The Peripheral Forest of The Park surrounds the Core Forest and is comprised of hardwoods and red cedar. In mid-succession, the Peripheral Forest is composed of a younger age-class of trees and is most notable for its dense understory of saplings. Shagbark hickories (*Carya ovata*) are relatively abundant here. These trees provide food for a variety of wildlife including squirrels, chipmunks, turkeys, and other mammals. They can also provide essential roost habitat and hibernacula for the Indiana bat (*Myotis sodalis*), a federally listed endangered species, as well as several other bat species.

The hickory population appears stable, with saplings sprouting underneath mature individuals in most areas. Left alone, these mature trees are likely to continue growing for decades to come. However, the health of the population should be monitored over time to ensure that shagbarks retain a strong presence. As a species of high wildlife value and potential economic value, there are management steps that can increase the vitality of the population. In The Park, the Peripheral Forest is heavily inundated with NNIS. Further establishment of NNIS is very likely given the large amount of light that reaches the forest floor.

Soils

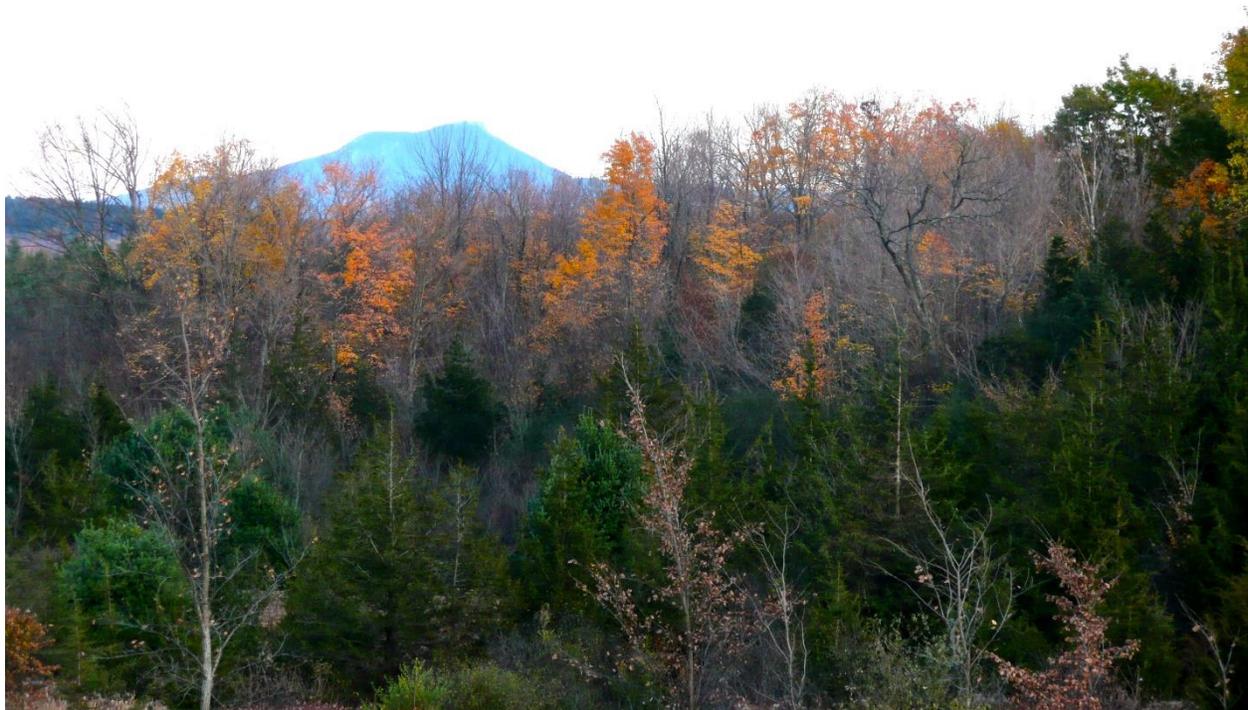
Soils are varied throughout the Peripheral Forest, ranging from rocky loams to clays. More precisely, the soils in the Peripheral Forest include Covington silt clay (Cv), Vergennes clay (VeB/C), Farmington extremely rocky loam (FaC), and Farmington-Stockbridge rocky loam (FsB).

Current Land Cover Type

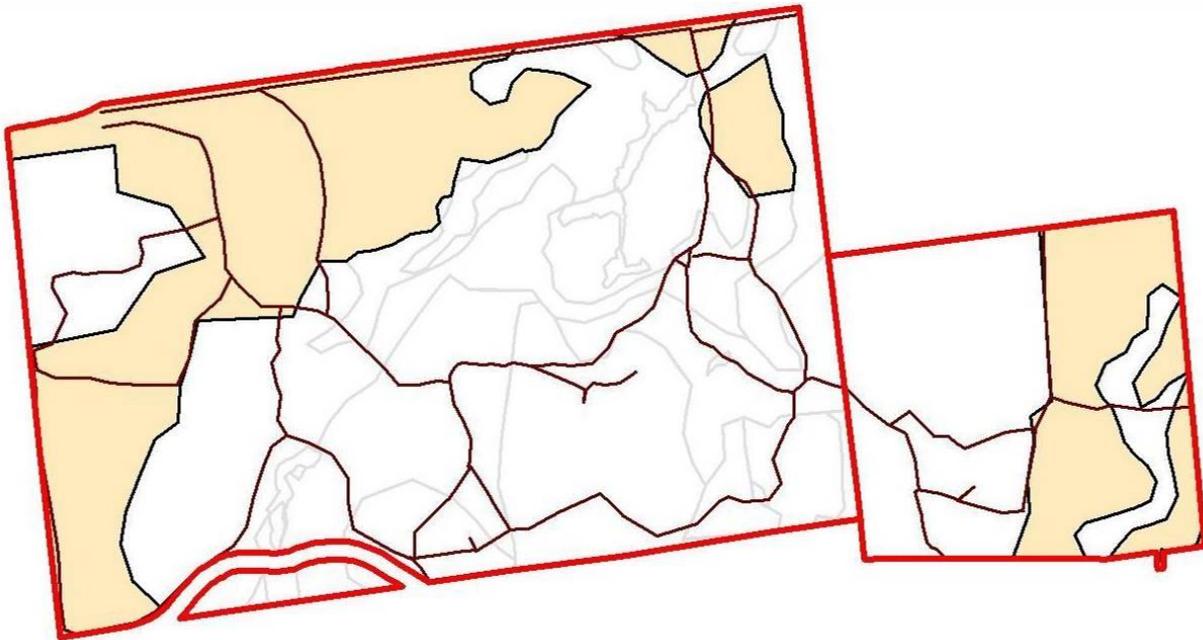
Hardwoods and red cedar dominate the Peripheral Forest. Also of note are several impressive emergent shagbark hickories. This area of the forest is severely infested with NNIS, in particular, common buckthorn (*Rhamnus cathartica*).

Natural Communities

At this time, as a result of the high density of NNIS, the Peripheral Forest does not exhibit any identifiable natural community designation known in Vermont. In terms of its soil structure, the Peripheral Forest may have been a Rich Northern Hardwood Forest before it was cleared for agriculture. Alternately, given its location between the Core Forest and the Grassland, the Peripheral Forest may have been a combination of, or a transition zone between, the Rich Northern Hardwood Forest (Core Forest) and the Valley Clay Plain Forest (Grassland). Disturbance from historical clearing of the neighboring grassland area is likely to have contributed to the thriving NNIS found here.



Management Area 3:
Grasslands



The Grasslands of The Park are comprised of several species of grasses, herbs and non-woody plants. In all probability, Grasslands were not found here prior to European settlement when they were most likely cleared of their primeval forests. The most recent uses of the Grasslands for agriculture would have been for haying. Grasslands provide a unique habitat for a suite of grassland nesting bird species and require active management to halt succession towards shrubby land types.

Soils

The Grassland soils are predominantly heavy and wet clay soils that drain poorly. More precisely, the large grassland in the middle of the property is mostly Vergennes clay. The hay field near Oak Creek is entirely less-sloped Vergennes clay (VeB). The field area south of The Homestead parcel has two different types of Vergennes clays (VeB and C), small areas of Covington silty clay (Cv) and Farmington-Stockbridge silty loam (FsC).

Current Land Cover Type

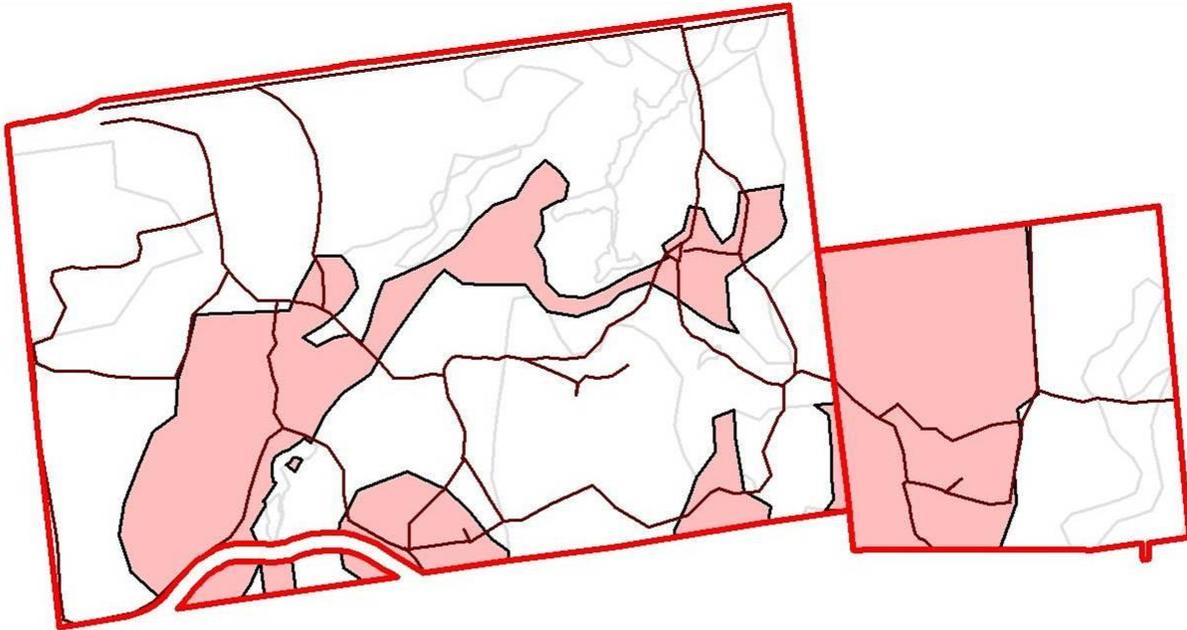
Grasses (*Poaceae spp.*) dominate the Grasslands found in The Park. Other herbaceous plants and forbs with a scattering of members of the sedge (*Cyperaceae*) and rush (*Juncaceae*) families are also present. If the Grasslands in The Park are not actively managed, ecological succession will transform them into Shrublands with dogwood, elm and NNIS dominating in the not too distant future.

Natural Communities

In the time prior to the early European settlers clearing the land, the Grasslands in The Park were likely a Valley Clayplain Forest, an extremely uncommon ecological community in Vermont today. The combination of the presence of Vergennes clay soil and tree species such as bur oaks (*Quercus spp.*) and shagbark hickories provide evidence for this (Thompson and Sorenson, 2005).



Management Area 4:
Shrublands



The Shrublands of The Park are comprised of early-successional species that are colonizing the fallow fields. Due to the high light exposure, shrubs and saplings that exhibit rapid growth dominate the Shrublands. The Shrublands in The Park include such species as Eastern red cedar (*Juniperus virginiana*), silky dogwood (*Cornus amomum*), and grey-stemmed dogwood (*Cornus Racemosa*). American elm (*Ulmus Americana*) is found in the transition zone between the Shrublands and the Wetlands. Shrublands provide a unique habitat for early successional species, and require active management to halt their natural succession to forested land cover.

Soils

The Shrubland soils in The Park are mostly clay, with some rocks and loam. More precisely, the dominant soil type is Vergennes clay (VeC) with the second most common being Covington silty clay (Cv). Other soil types include Farmington-Stockbridge rocky loam (FsC), less-sloped Vergennes clay (VeB), and Farmington extremely rocky loam (FaC).

Current Land Cover Type

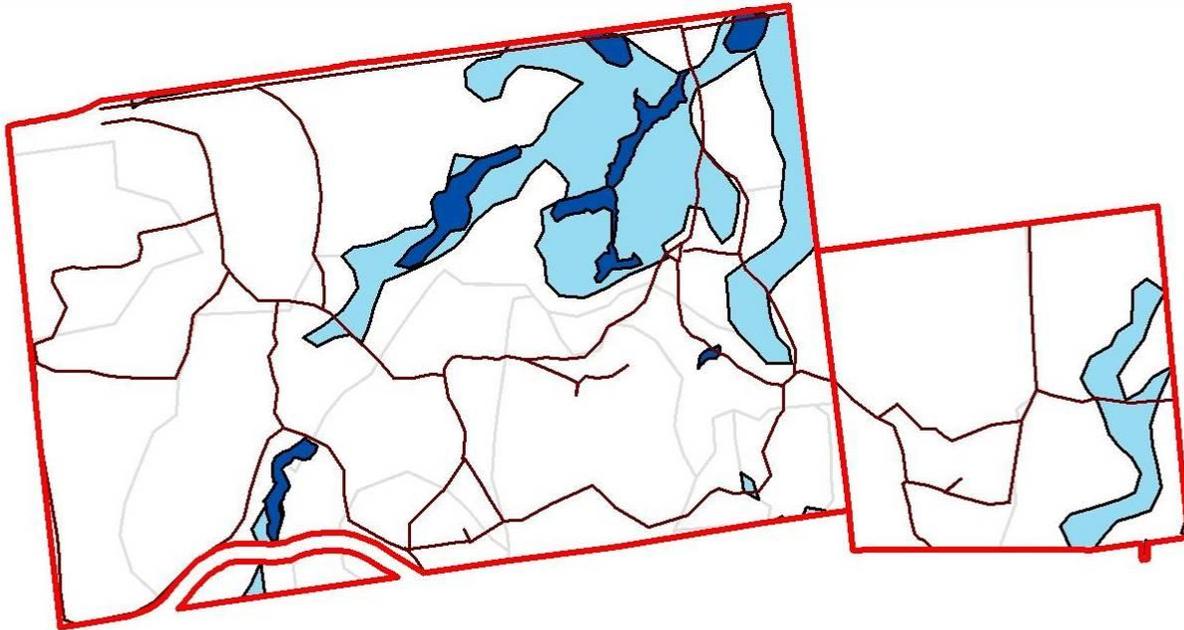
The Shrublands are undergoing the early stages of ecological succession from grassland to forest. Many fast growing shrubs and trees dominate this management area. The Shrublands in The Park include Eastern red cedar (*Juniperus virginiana*), silky dogwood (*Cornus amomum*), and grey-stemmed dogwood (*Cornus racemosa*). In the transition zone where the Shrublands give way to the Wetlands, American elm (*Ulmus americana*) dominates. The continued existence of the Shrublands, like the Peripheral Forest and the Grasslands, are threatened by NNIS encroachment. Common buckthorn (*Rhamnus cathartica*), honeysuckle (*Lonicere sp.*), autumn olive (*Elaeagnus umbellata*) and multiflora rose (*Rosa multiflora*) are the primary species that threaten to overtake the native species.

Natural Communities

Prior to the European clearing of the Shrublands in The Park, this management area was likely a mix of Rich Northern Hardwood and Valley Clayplain Forests. This conclusion is based on the soil types present here. This natural community is comprised of a diverse mixture of tree species including white oak (*Quercus alba*), red oak (*Q. rubra*), red maple (*Acer rubrum*), and shagbark hickory. Associated species include Eastern hemlock (*Tsuga canadensis*), sugar maple, American beech (*Fagus grandifolia*), swamp white oak (*Q. bicolor*), and bur oak (*Q. macrocarpa*) (Thompson and Sorenson, 2005).



Management Area 5:

Wetlands

The Wetlands in The Park are characterized by their wet soils and the dominance of hydrophilic (wet-loving) plants. These areas are not always wet, but because they are saturated for part of the year, only wetland plant species may grow here. The streams found in the Wetlands are tributaries of Potash Brook and carry water through The Park from adjoining properties. Each of the Wetlands' habitats has a different management need that must be addressed to maintain the healthy functioning of the Wetlands. The City of South Burlington seeks to identify ways to mitigate natural processes to improve the health and function of hydrologic systems within the community. The South Burlington Storm Water District uses multiple strategies to control runoff that ultimately empties into the Lake Champlain watershed. Healthy Wetlands in The Park will help promote this goal of healthy hydrologic systems.

Soils

The Wetlands' soils are predominantly clay. More precisely, the Wetlands contain only clay soil types, the most dominant being the Covington clay (Cv). There are also patches of Vergennes clay soils (VeB and C).

Current Land Cover Type

The Wetlands in The Park can be broken down into two sub-habitats: (1) a shallow, emergent marsh characterized by robust growth of grasses, sedges and herbs, and (2) an open sedge meadow with tussock sedge (*Carex stricta*) forming broad high raised mounds, horsetail (*Equisetum* sp), marsh marigold (*Caltha palustris*) and sensitive fern (*Onoclea sensibilis*). Several hydrophilic woody plants are sparsely dotted throughout the marsh and meadow areas. The most commonly found species are elm (*Ulmus* sp.), dogwood (*Cornus* sp.), currant (*Ribes* sp.), willow (*Salix* sp.) and red maple (*Acer rubrum*). Cattail marshes form monocultures of cattail stands closer to the property boundaries (*Typha* sp.) with occasional herbaceous and grass species.

Natural Communities

Three communities dominate the Wetlands in The Park: shallow emergent marsh, sedge meadow, and cattail marsh. These communities are characterized by specific hydrologic features, typically having moist to saturated soils with only seasonal flooding or inundation. The exception is the cattail marshes that typically have standing water only during the growing season (Thompson and Sorenson, 2005). The shallow emergent marsh, otherwise known as wet meadows, have little standing water, lush growth of herbaceous plants and most often form on abandoned agricultural areas (Thompson and Sorenson 2005). Open sedge meadows, occurring along streams and pond margins, are usually part of a larger wetland complex such as the shallow emergent marsh. Cattail marshes are most commonly found in disturbed areas due to their tolerance for substantial changes in water levels. These Wetlands are often overlooked, but provide significant ecological functions.



Management Area 6:
The Homestead



The Homestead of Wheeler Nature Park is located in the northwest section and possesses much of the historical and cultural significance to The Park. It is currently comprised of a brick building and includes approximately 11-14 acres of land. The house is currently listed on the Vermont Register of Historic Places. Since its purchase, the city has leased the Homestead to various individuals and organizations. No other long term plans have been developed for its use at this time.

The surrounding land showcases several unique and educational gardens, providing visitors a place to learn about and engage with a valuable resource in our own community. The City's vision for this parcel has been to maintain it as a resource for the community to engage in natural, ecologically based activities.

The gardens are maintained by the Burlington Garden Club, whose members devote many hours to their care. The gardens are also used by the South Burlington Community Library and Recreation Departments for special children's activities. The gardens are often the subject of local photographers, both amateur and professional. It is not unusual to spot couples having their engagement photos taken in the gardens.

The city's only community gardens are located on this area, rented seasonally, to local citizens. The gardens bring together individuals and families representing the diversity in our community, such as ethnicity, age, disability and gardening expertise. Many of the gardeners live in multi-family homes in nearby neighborhoods where homeowner associations prohibit home gardening.

TREEage

Located in the Southeast section of The Park is the TREEage Community Nursery (<http://www.treeage.org>). Founded in 2008, this community nursery offers many environmental, aesthetic, and financial benefits to the City. Volunteers of all ages are engaged in tree planting and stewardship. When ready, the trees will be planted throughout the City along streets, at schools and in parks. TREEage is an Extension Master Gardener, Stewardship of the Urban Landscape (SOUL), and GE Volunteer project promoting best maintenance practice of urban trees. The tree nursery is a valuable long term investment for our community.



Other Land Parcels Contiguous to Wheeler Nature Park

The city owns an additional land parcel east of The Park and is in the process of finalizing the acquisition of another contiguous parcel on the south eastern border of The Park. This Management Plan does not address the management of these areas, at this time.



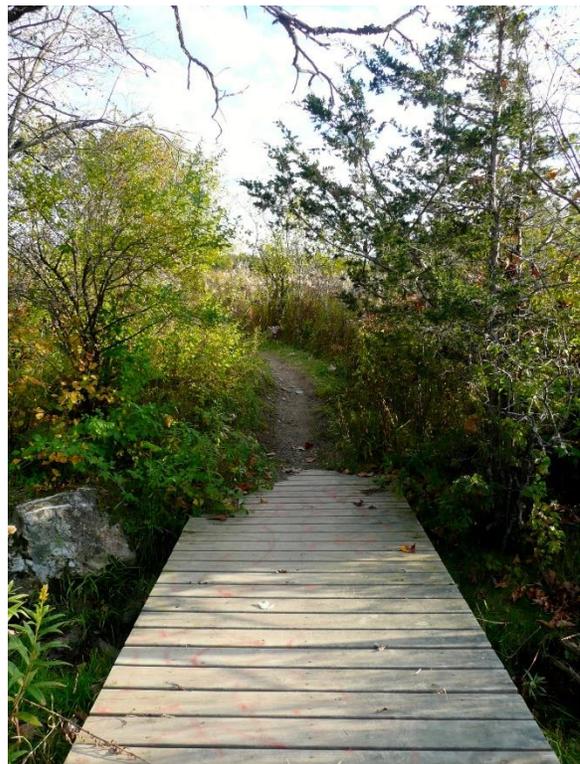
SECTION 2: RESOURCES AND OPPORTUNITIES

The following items have been identified by the SBNRC to be embraced in the management of The Park.

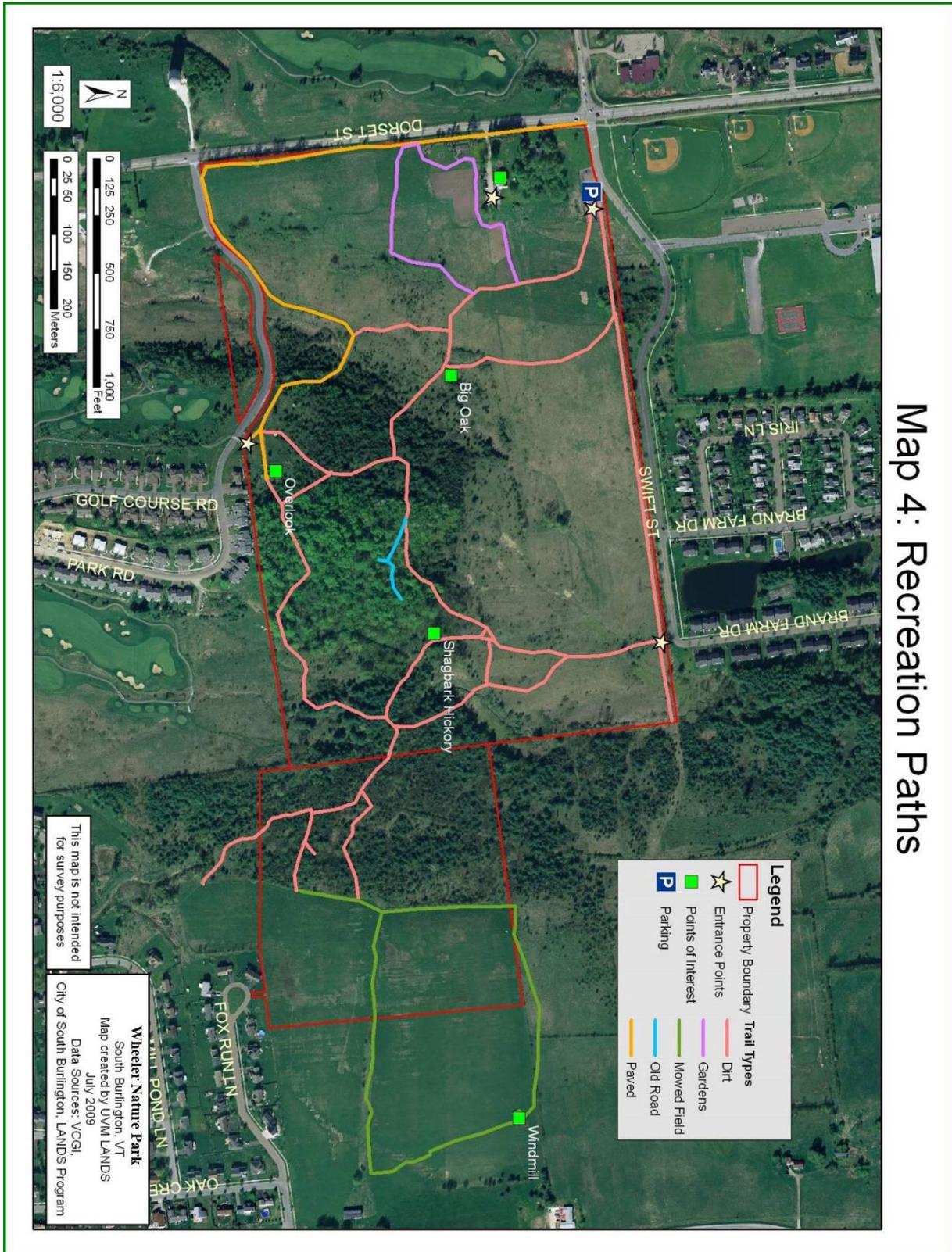
➤ Trails

A network of trails was developed throughout the natural area providing visitors with access to The Park. The trails have become a popular resource to residents as well as visitors from other communities. Trail maps available through the South Burlington Recreation Department and city's website guide visitors through The Park, enabling them to enjoy a multitude of activities such as hiking, cross country skiing, snowshoeing, photography and star gazing.

These trails are a valued resource and require careful maintenance and oversight as an integral part of this Management Plan.



Map 4: Recreation Paths



➤ **Agriculture**

While there is evidence of recent farming, the probability for significant future agriculture in The Park is low. The majority of the potential agricultural lands on the property (primarily the Grasslands) are currently undergoing the natural process of succession where woody plants are taking over the grassy fields. Even with succession, there are a few agricultural initiatives underway.

Permitting active haying of the Grasslands during specific times of the year would eliminate the process of succession in the Grasslands, ensuring the continued support of Grassland birds in The Park.



Located in the southeast section of The Park is the TREEage Community Nursery which serves as the City's community nursery. Founded in 2008, this community nursery offers many environmental, aesthetic, and financial benefits to the City. Volunteers of all ages are engaged in tree planting and stewardship. When ready, the trees are planted throughout the City along streets, at schools and in parks. TREEage is an Extension Master Gardener, Stewardship of the Urban Landscape (SOUL) and GE Volunteer project promoting best maintenance practices of urban trees. The tree nursery is a valuable long term investment for our community.

Currently, the City's only community gardens are located at The Homestead. Plots are available to city residents for seasonal rental.



➤ Learning Opportunities

Resources found at The Park present significant opportunities for community outreach. For example, signage, information packages, and a Visitors' Guide could be developed as means to educate visitors. These things will enhance The Park experience by illustrating historical facts, natural history, points of interest and suggested Internet links to learn more. Other programs could be developed consisting of presentations and community workshops given by leaders in particular fields of interest. These opportunities and other collaborative efforts would promote the long-term well-being of The Park.

The following is an expanded, but by no means complete, list of potential learning opportunities:

- **History:**
 - Outline the history of The Park
 - Tell the land use history over the years
 - Show the history of The Park through historic photos

- **Natural History:**
 - Identify plants (both native and invasive) and animals (birds, mammals, amphibians, reptiles and insects) that live in The Park through sight, sound and signs (such as tracks)
 - Describe the different strategies for survival of some of the more charismatic species
 - Explain the management techniques available to preserve (or remove, in the case of NNIS) the species found in The Park

- **Wetlands:**
 - Identify the location of wetlands
 - Outline methods to protect the wetlands
 - Monitor water quality of the wetlands
 - Study ecosystem services (such as natural water filtration and water storage) provided by the wetlands
 - Study how the wetlands support the health and function of the community's hydrologic system
 - Promote the importance of vernal pools

- **Agriculture:**
 - Consider haying or brush hogging the Grasslands
 - Describe the sugarbush and its historical significance in the agriculture of The Park
 - Promote home, school, and community gardening
 - Continue to support the community tree nursery

➤ **Collaborations**

Collaborating with other organizations to accomplish management objectives and information dissemination could include a number of different activities such as:

- Identify and control non-native invasive species
- Monitor wildlife populations
- Monitor water quality
- Maintain the trail network
- Group nature walks along trails
- Survey visitors and residents of South Burlington for feedback
- Bird watching and identification
- Tree stewardship workshops
- Arbor Day celebrations to support South Burlington's status as a Tree City USA
- Gardening tips and tricks
- Maple sugaring demonstrations

Potential collaborators could include the following organizations:

- Boy and Girl Scout troops, Vermont Youth Conservation Corps, schools, City committees, The Rotary Club, The National Gardening Association, GE Volunteers, Extension Master Gardener Program and Stewardship of the Urban Landscape (SOUL), South Burlington Land Trust, The Nature Conservancy, University of Vermont, The Land Stewardship Program (LANDS), neighbors and others



SECTION 3: MANAGEMENT CHALLENGES

The following items have been identified as challenges by the SBNRC and must be confronted in the management of The Park. These challenges should be addressed to properly manage The Park.

➤ Trails

Trails are the principal means of access to The Park and bring visitors through each of the five natural communities. For this reason, there are a number of management concerns that arise over time as the trails are used more and more frequently:

- Seasonal weather changes and encroachment of vegetation result in trail widening, erosion and unintended development of new trails
- Changing conditions on trails require ongoing maintenance
- See appendix for map of trail problems



➤ **Ecology, Wildlife, and Habitat**

Wildlife populations require quality habitat to remain viable. City parks often experience ecological challenges that arise over time:

- Encroachment of NNIS throughout the five natural communities threatens natural succession
- Erosion has a detrimental impact to the surrounding ecosystems
- Litter (including dog refuse) in The Park is harmful
- Off-trail hiking threatens the five natural communities
- The encroachment of non-native invasive species threatens the ecological resources necessary to sustain wildlife populations



➤ **Resources**

The South Burlington community will need many resources to come together to manage The Park effectively over the long term:

- Prioritize Management Plan actions
- Secure funding
- Recruit volunteers
- Establish an ad-hoc citizen committee, analogous to the Red Rocks Committee
- Determine responsibility

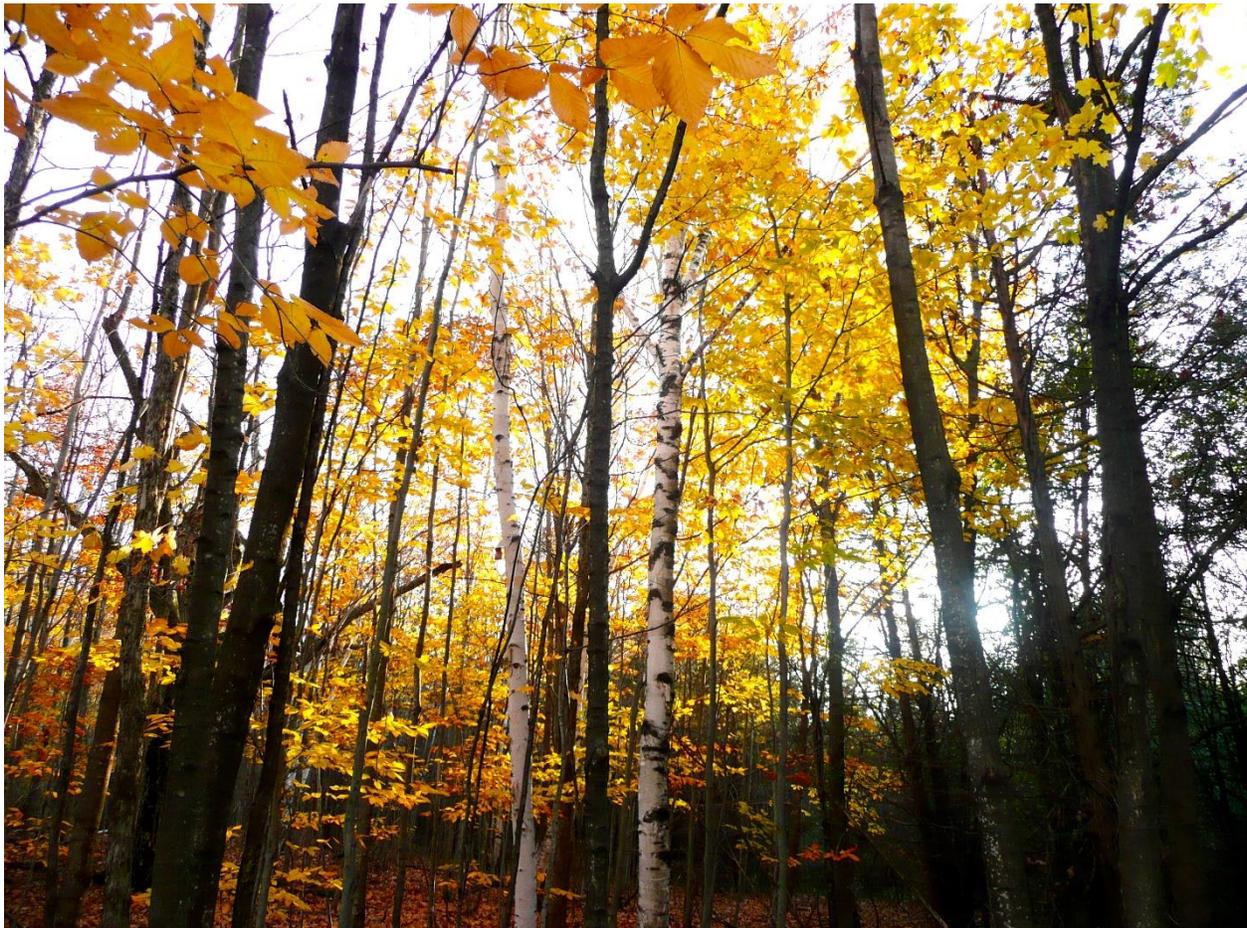
➤ **Existing City Ordinances**

Visitors will be expected to abide by applicable City ordinances while at The Park. Pertinent information will be stated through the learning opportunities noted earlier with particular emphasis on the consequences of non-compliance on the natural communities in The Park. With this Management Plan, we hope to encourage visitors to become advocates for our mission to preserve, protect and respect the natural areas.

Future land use initiatives of The Park will be expected to comply with permitting requirements of the City. In addition, such a proposal should be reviewed by the SBNRC for compliance with the mission and support of the goals and objectives of this Management Plan.

For example, here are some pertinent City ordinances:

- Ordinance Regulating Conduct in South Burlington Parks (Section 2)
- Ordinance for the Care and Control of Dogs and Cats (Section 4)
- City of South Burlington Tree Ordinance



SECTION 4: GOALS AND OBJECTIVES

The SBNRC recommends the following goals and objectives supporting our vision to preserve, protect and respect our natural areas. Examples are cited to emphasize some of the actions to be considered for the action plans.

GOAL 1: Ensure the viability of the management areas (Core Forest, Peripheral Forest, Wetlands and Streams, Grasslands, Shrublands, and The Homestead) and the wildlife found in The Park through a combination of active management and natural processes.

Objectives:

1. Establish management methodologies to ensure the management areas within The Park thrive for the foreseeable future.
2. Maintain existing native plant species composition in each management area as appropriate within successional stages of development.
3. Assess the wildlife use of The Park (mammals, birds, amphibians, reptiles, insects and other invertebrates).
4. Identify any potential corridors to natural habitats outside of The Park and manage lands in The Park to maximize linkage.
5. Develop tools for communicating information such as signage, visitor guides, maps and websites to maximize the use of available media technology. Signage should be installed at the four trailheads of The Park.
6. Collaborate with community organizations, volunteers and others, to maintain the Homestead parcel as a resource for South Burlington residents.



GOAL 2: Provide a place where visitors can enjoy nature through passive recreation that is compatible with the other management objectives of The Park.

Objectives:

1. Ensure that a trail system enables visitors to experience the diverse areas of The Park and protects wildlife and habitat viability.
2. Organize field trips to The Park for students in the South Burlington School District.
3. Organize natural history trail walks through The Park.
4. Develop natural history information for visitors to The Park.
5. Develop strategies to ensure visitors with disabilities have access to The Park.



GOAL 3: Improve the Potash Brook watershed through storm water retention and filtration while adding to ecological richness of The Park.

Objectives:

1. Protect wetlands so they will act as pollutant filters and recycle nutrients on the property.
2. Combat stream bank erosion as recommended by water experts. Sedimentation and soil erosion can threaten the integrity of the surrounding wetland vegetation and stream health.



APPENDICES

Appendix A: Park Management Schedule

Seasonal Maintenance

- Conduct spring and autumn site walk inspections to identify seasonal maintenance priorities
- Identify and prioritize Non-Native Invasive Species (NNIS) for removal, including invasive forest pests
- Identify and prioritize natural resources and wildlife habitat for preservation or restoration

Short-term Management Actions – 1 year

Trails

- Remove obstructions on trails
- Install or repair puncheons and bridges to remediate trail widening and encroachment
- Deter the use of unauthorized trails by discontinuing weed whacking
- Provide effective use of trails by blazing trees, adding signage, and updating maps, guides and other informational materials

Natural Resources and Habitats

- Monitor wildlife
- Brush hog grasslands and shrublands to maintain wildlife habitat
- Remove and control Non-Native Invasive Species, especially along trails
- Prune shrubby vegetation and tree branches and release mast trees to reduce encroachment
- Test stream hydrology

Long term Management Actions – 3+ years

- Identify and monitor Non-Native Invasive Species
- Investigate possible uses of Wheeler Nature Park as a “working landscape”
- Add to trail network
- Maintain watershed area

Outreach

- Collaborate with other organizations concerned with natural resources and the historical value of the Park, including the SB Recreation Department, the SB Library, SB Schools, UVM, VYCC, and the Chittenden County Stream Team
- Seek out possible sources of public and private aid, such as funding and volunteer workers, to assist with the maintenance of The Park
- Promote the many learning opportunities made possible by the Park
- Engage visitors and residents and monitor feedback

The Homestead

- Provide input to city officials ensuring The Homestead and natural area remain the singular parcel known as the Wheeler Nature Park
- Provide input to city officials ensuring that any use or activities at The Homestead maintain its aesthetic, historical value, and relationship to the natural area

Appendix B: Example Strategies to Accomplish Goals and Objectives

GOAL 1: Ensure the viability of the management areas (Core Forest, Peripheral Forest, Wetlands and Streams, Grasslands, Shrublands, and The Homestead) and the wildlife found in The Park through a combination of active management and natural processes.

Objectives:

1. Establish management methodologies to ensure the management areas within The Park thrive for the foreseeable future.

Strategies:

- Use archived documents (historical maps and aerial photographs) and regularly collected information to document large spatial and temporal scale disturbances and changes to the management areas.
 - Buffer wetlands and streams to limit direct access by visitors.
 - Cut the Grassland and Shrublands to promote a diversity of vegetation age classes.
 - Maintain a mixed age class Core Forest through single tree and group selection, crop tree management, or small patch cutting silvicultural treatments.
 - Assess the level of deer grazing damage to trees on The Park.
 - Maintain a timeline for targeted management strategies.
2. Maintain existing native plant species composition in each management area as appropriate within successional stages of development.

Strategies:

- Consult historical maps, aerial photographs and Google Earth documents to demonstrate large spatial and temporal scale disturbances.
- Implement a NNIS and invasive forest pest control program.
 - Manage for zero net growth of NNIS and measure growth rate of young native trees (2009 Lands Report as baseline).
 - Survey the host trees for forest pests such as Asian Long horned Beetle (ALB), Emerald Ash Borer (EAB) and Hemlock Woolly Adelgid (HWA).
 - Recruit volunteers to assist as needed.

3. Assess the wildlife use of The Park (mammals, birds, amphibians, reptiles, insects and other invertebrates).

Strategies:

- Task volunteers to control NNIS, monitor water quality, maintain stream buffers and keep the trails in good order to minimize habitat degradation on a regular basis.
- Engage the UVM community to conduct research and data collection in The Park. One project might be to conduct a systematic wildlife inventory to determine what wildlife (i.e. mammals, birds, amphibians, reptiles, insects, and other invertebrates) and vegetation (i.e. trees, shrubs, flowers and grasses) are found in The Park.
- Develop a “citizen science” program in The Park to monitor the wildlife and vegetation after the UVM program has finished or hold a “bio-blitz” on a regular basis.
- Enlist school children in a bird box building / mounting / monitoring program.
- Contact the Vermont Department of Fish and Wildlife to carry out a complete survey of The Park for endangered Indiana Bats and modify management actions accordingly.

4. Identify any potential corridors to natural habitats outside of The Park and manage lands in The Park to maximize linkage.

Strategies:

- Identify nearby natural areas.
- Facilitate links to similar habitats in The Park.

5. Develop tools for communicating information such as signage, visitor guides, maps and websites to maximize the use of available media technology. Signage should be installed at the four trailheads of The Park.

Strategies:

- The parking area at the northwest corner
- The northeast corner at the east end of Swift Street
- The southeast corner adjacent to Butler Farms
- The overlook area located at the top of Park Road

6. Collaborate with community organizations, volunteers and others, to maintain the Homestead parcel as a resource for South Burlington residents.

Strategies:

- A place to learn about and engage with natural resources and gardening in the community.

GOAL 2: Provide a place where visitors can enjoy nature through passive recreation that is compatible with the other management objectives of The Park.

Objectives:

1. Ensure that a trail system enables visitors to experience the diverse areas of The Park and protects wildlife and habitat viability.

Strategies:

- Maintain the trails according to intended use and within established guidelines.
- Keep all trails out of the most sensitive parts of each management area.
- Monitor the effect of trail use over time through photographic images and ground measurements, including both on-trail and off-trail use.

2. Organize field trips to The Park for students in the South Burlington School District.

Strategies:

- Encourage school groups to visit the site
- Collaborate with schools to develop hands-on science projects

3. Organize natural history trail walks through The Park.

Strategies:

- Instruct visitors on proper conduct in The Park and conserved areas
- Provide information on the natural features of The Park.

4. Develop natural history information for visitors to The Park.

Strategies:

- Construct interpretive signs and guides to identify the Natural communities present within The Park
- Release research projects and their findings to the public
- Promote The Park on websites such as the City's, The Other Paper and others.

5. Develop strategies to ensure visitors with disabilities have access to The Park.

GOAL 3: Improve the Potash Brook watershed through storm water retention and filtration while adding to ecological richness of The Park.

Objectives:

1. Protect wetlands so they will act as pollutant filters and recycle nutrients on the property.

Strategies:

- Establish a water quality testing scheme for the stream hydrology to monitor the ecosystem.
 - Continue the water chemistry testing that has been conducted at three focal points of Potash Brook tributaries on the property.
2. Combat stream bank erosion as recommended by water experts. Sedimentation and soil erosion can threaten the integrity of the surrounding wetland vegetation and stream health.

Strategies:

- Work with the Champlain Water District to limit periodic travel by wheeled vehicles over right of way of water system pipes.
- Develop a guide to describe the ecological characteristics of wetlands.



Appendix C: Action Guidance and Checklist

The action guidance below will be used when active management is required to achieve Management Plan goals of The Park, and will be determined by a site walk inspection conducted at least annually or as deemed necessary.

INSPECTION:

Active management tasks will be determined based on site walk inspections at least annually.

PRIORITIZATION:

The task list will be prioritized for action using several considerations such as: importance, risk, resources needed and available, cost to complete, funding available, seasonal habitat sensitivity and more.

ACTION:

The Action Plan resolutions will be scheduled for completion and responsibility assigned.

RESOLUTION:

The completed task outcomes will be measured for success. This will be an ongoing process and evaluated as each cycle is completed. Then the cycle will begin again.

Each Action Plan will contain, but is not limited to, the following information:

- Goal(s) supported by the action
- Observation noted by site walk inspection
- Location of observation (The Park map grid to be used)
- Action to be done
- Due date for completion
- Status of task noted as plan progresses
- Identify resources needed and estimate cost
- Prioritize action items based on all considerations
- Determine how to proceed, assign responsibility for approved action and track status
- Review process and modify as needed to best achieve goals
- Document and publish results.



Active Management Tasks

The following is a list of potential tasks to be considered while assessing maintenance concerns of The Park during a site walk inspection. These tasks must support the vision statement and goals that form the basis of this Management Plan.

Trails

- Install or repair puncheons, bridges, etc
- Remediate trail widening, trampling, enhance, etc
- Remove obstructions on trails
- Deter unauthorized trails
- Add to trail network
- Improved signage

Non-Native Invasive Species (NNIS)

- Identify and monitor NNIS
- Remove and control NNIS
- Survey for invasive forest pests



Habitat

- Hay or brush hog the Grassland and Shrubland
- Monitor Wildlife
- Remediate watershed area
- Testing the stream hydrology on the property ecosystem
- Release mast trees
- Prune shrubby vegetation encroachment
- Prune tree branches or tree removal

Outreach

- Promote partnerships and collaboration with others
- Update maps, guides, other informational materials
- Promote the many learning opportunities noted above
- Engage visitors, residents and track feedback
- Repair, replace existing sign
- Add new sign

The Homestead

- Recommend the city continue to research the history of The Homestead and pursue its inclusion on the National Register of Historic Places
- Ensure The Homestead and natural areas remain unified as Wheeler Nature Park
- Improved trails connecting The Homestead and natural areas
- Provide input to city officials on the future uses of The Homestead
- Demolish the abandoned smaller house on The Homestead



Appendix D: General Categories for 2011-2012 Action Plan

The annual (or as-needed) site walk inspections will help to identify critical areas for maintenance tasks over the next year. Many areas overlap and we advise to always seek advice from experts to help prioritize.

The SBNRC conducted a site walk on August 8, 2011, from 9:00am - 12:00pm, to inspect The Park and determine the most pressing priorities for site management. The resulting inspection data will be entered into the Checklist for further prioritization and evaluation. The Checklist will be added to this Appendix B following the site walk inspection and the completed version of the dynamic document will also be included as the final measurement.

The SBNRC also distilled its understanding of existing tasks into the following list of **High Priority Tasks**. These are the areas that the Committee feels offer “low-hanging fruit” that can be executed with relative ease and relatively low costs and that will result in significant rewards.

These High Priority Tasks should be updated annually after a site walk. The task categories may also be updated.

Trails

- Install or repair puncheons
- Name the trails

Non-Native Invasive Species (NNIS)

- Remove and control NNIS – select an area to focus first.
- Collaborate with The Nature Conservancy or regional experts to advise on priority
- Timing and process is important and plan for iterative process

Habitat

- Hay or brush hog the grassland and shrubland
- Monitor wildlife

Outreach

- Partnerships
- Signage
- Bike rack

The Homestead

- Research history of The Homestead and current land use
 - Done 08/2011
- Provide City Staff with recommendations for future lease
 - Done 08/2011

Appendix E: Non-Native Invasive Species Resources and Other References

The following list of research topics will be helpful when the tasks are related to invasive plant identification and management.

www.nature.org/vermont

The Nature Conservancy of Vermont's - The Wise on Weeds! section has information about the program, fact sheets on the most critical terrestrial invasive species affecting Vermont, and information about mechanical and herbicidal methods of removal.

www.vtinvasiveplants.org

The Vermont Invasive Exotic Plant Committee (VEIPC) - Includes information about VEIPC activities, as well as a "Gallery of Invaders", useful for identifying individual species and tips on management techniques.

www.tncweeds.ucdavis.edu

Includes invasive species fact sheets, information on controlling invasives and a wide variety of invasive exotic species information.

www.vermontagriculture.com/invasive.htm

The Vermont Department of Agriculture - Explains the Vermont plant quarantine rule and provides its entire text.

www.uvm.edu/mastergardener/invasives/invasives.htm

The Master Gardener of Vermont site has the entire Vermont Invasive Exotic Plant Fact Sheet Series in a PDF format.

www.anr.state.vt.us/dec/waterq/ans/ans-index.htm

Vermont Department of Environment Conservation - This Aquatic Nuisance Species section of the Water Quality Division web site presents information regarding aquatic nuisance species. The Vermont DEC manages the Vermont Aquatic Nuisance Control Program.

www.nps.gov/plants/alien/factmain.htm

Plant Conservation Alliance - Illustrated, easy-to-read fact sheets on invasive alien plants with native ranges, plant descriptions, ecological threats, U.S. distributions & habitats, background of introductions, plant reproduction & dispersal, management approaches, alternative native plants, and other useful information.

www.cropsci.ncsu.edu/aquaticweeds/comturf/turf.htm

Water Gardens, Aquascaping, Lake Restoration and Aquatic Weeds – This site was created by a professor in North Carolina but contains general information that would be helpful for northeastern aquatic environments.

<http://invasions.bio.utk.edu>

The Institute for Biological Invasions - The IBI site has an extensive library on biological invasions consisting of books, journal articles, government reports, conference proceedings, magazine and newspaper articles, and other 'gray' literature. In addition, they provide links to sites about invasives policies and programs, specific species information, databases, recent invasives news, and sites by region, habitat and taxon.

www.vt.nrcs.usda.gov/programs

The Natural Resources Conservation Service has several funding programs that provide funding for land management, including invasives removal.

www.usda.gov

Each year, the U.S. Department of Agriculture publishes “USDA Grant and Partnership Programs That Can Address Invasive Species Research, Technical Assistance, Prevention and Control”.

References

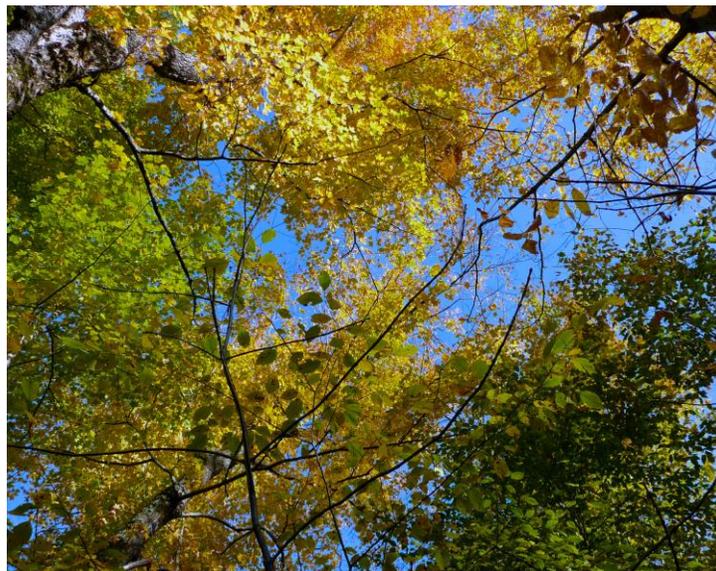
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Thompson, E. H., and E. R. Sorenson. 2005. Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont. Hanover: University Press of New England.

Vermont Fish and Wildlife Department. “Rare and Uncommon Vascular Plants of Vermont Nongame and Natural Heritage Program.” 6 July 2009.
http://www.vtfishandwildlife.com/library/Reports_and_Documents/Nongame_and_Natural_Heritage/Rare_Threatened_and_Endangered_Species.pdf



Appendix F: Trail Resources

<https://www.greenmountainclub.org>
Green Mountain Club trail maintenance

<http://www.americantrails.org>
American Trails online trails resource

<http://www.vycc.org>
Vermont Youth Conservation Corps trail maintenance

<http://www.vtfpr>
Vermont Department of Forests, Parks and Recreation

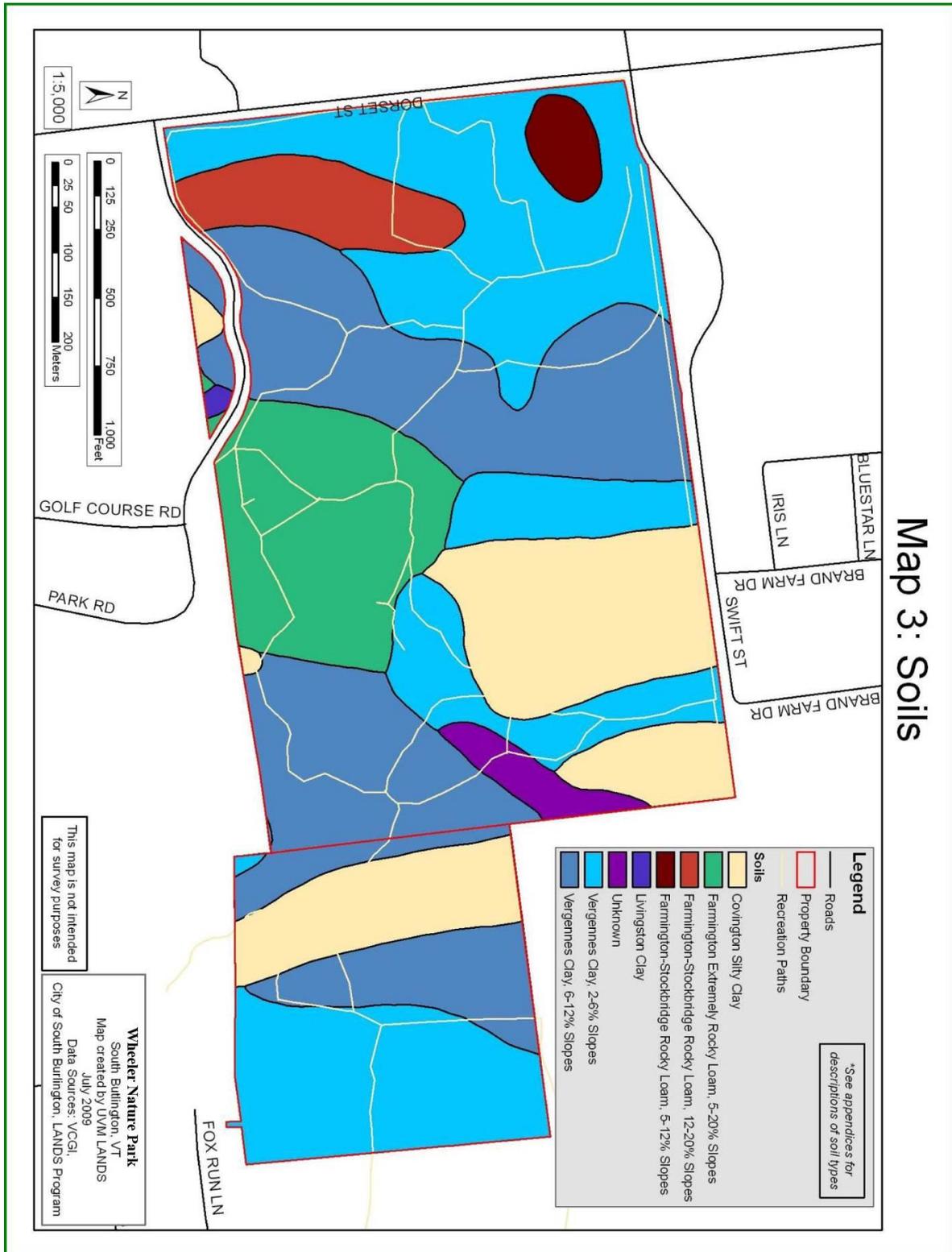
- Vermont's Recreation Trails Program Grants

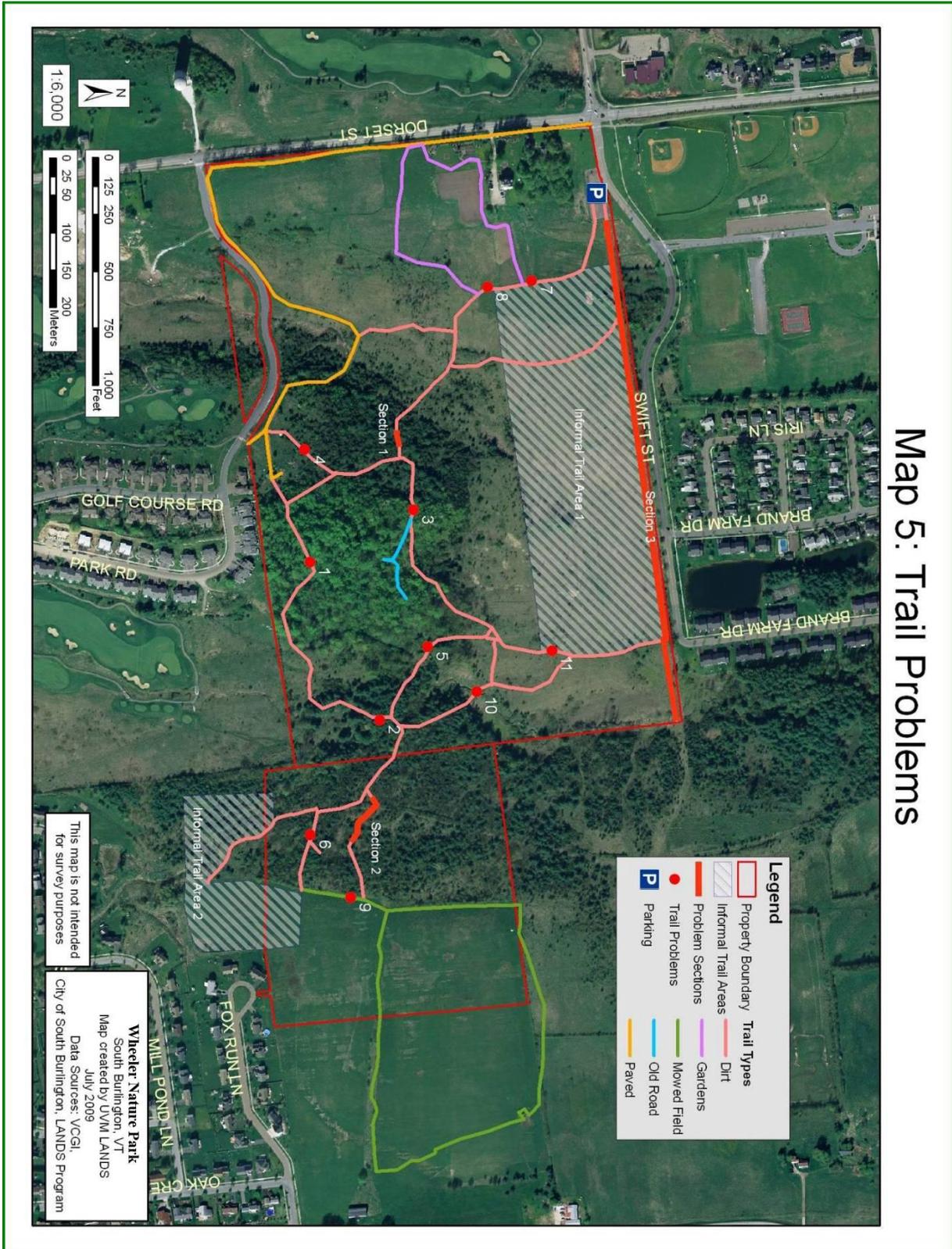
<http://www.appalachiantrail.org/site/c.mqLTIYOwGIF/b.4805859/k.BFA3/Home.htm>
Appalachian Trail Conservancy

- Trail Management Reference Library
- Training and workshops
- Trail work hazards and safety gear

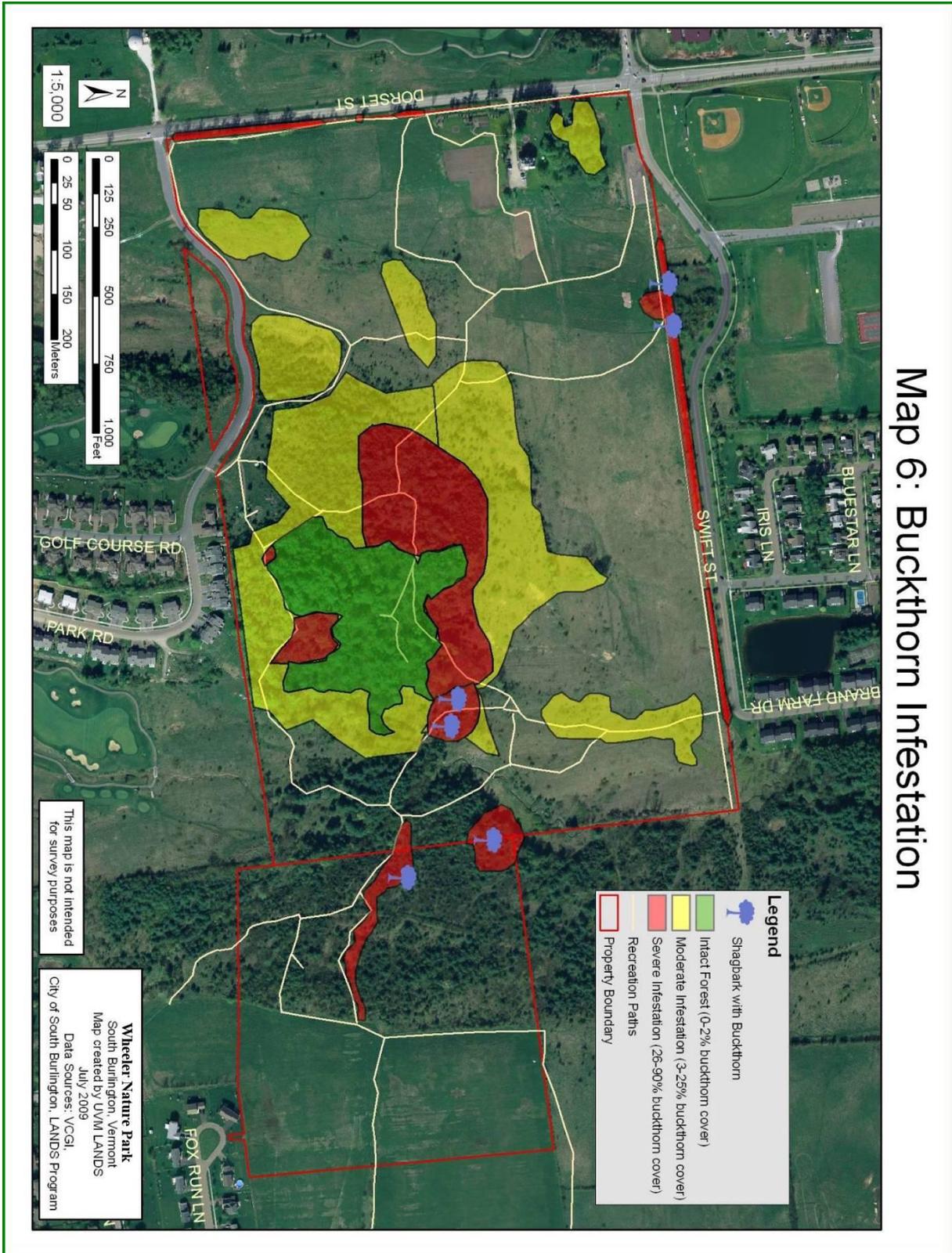
<http://www.fhwa.dot.gov/environment/fspubs/07232806/index.htm>
Trail Construction and Maintenance Notebook

Appendix G: Additional Maps

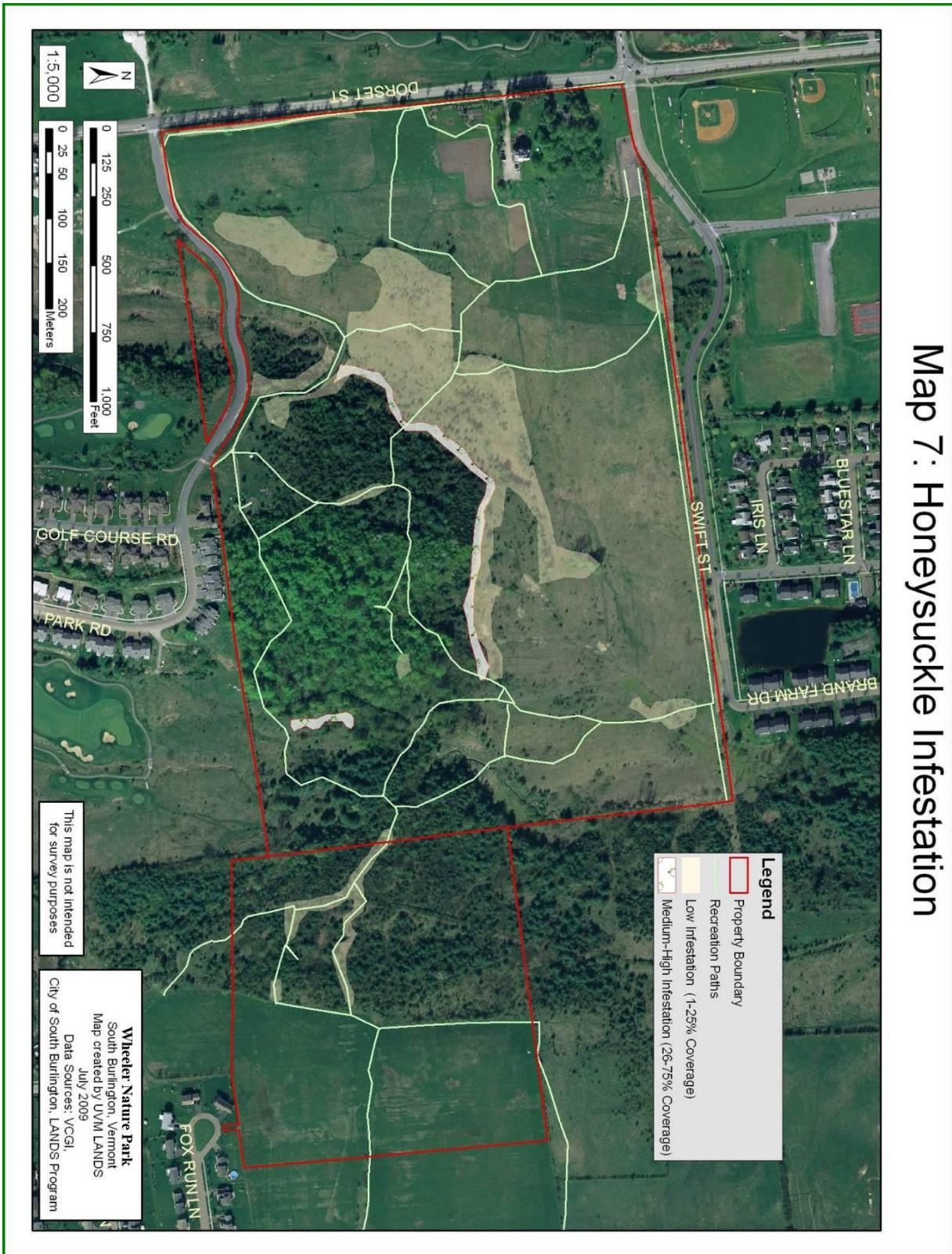




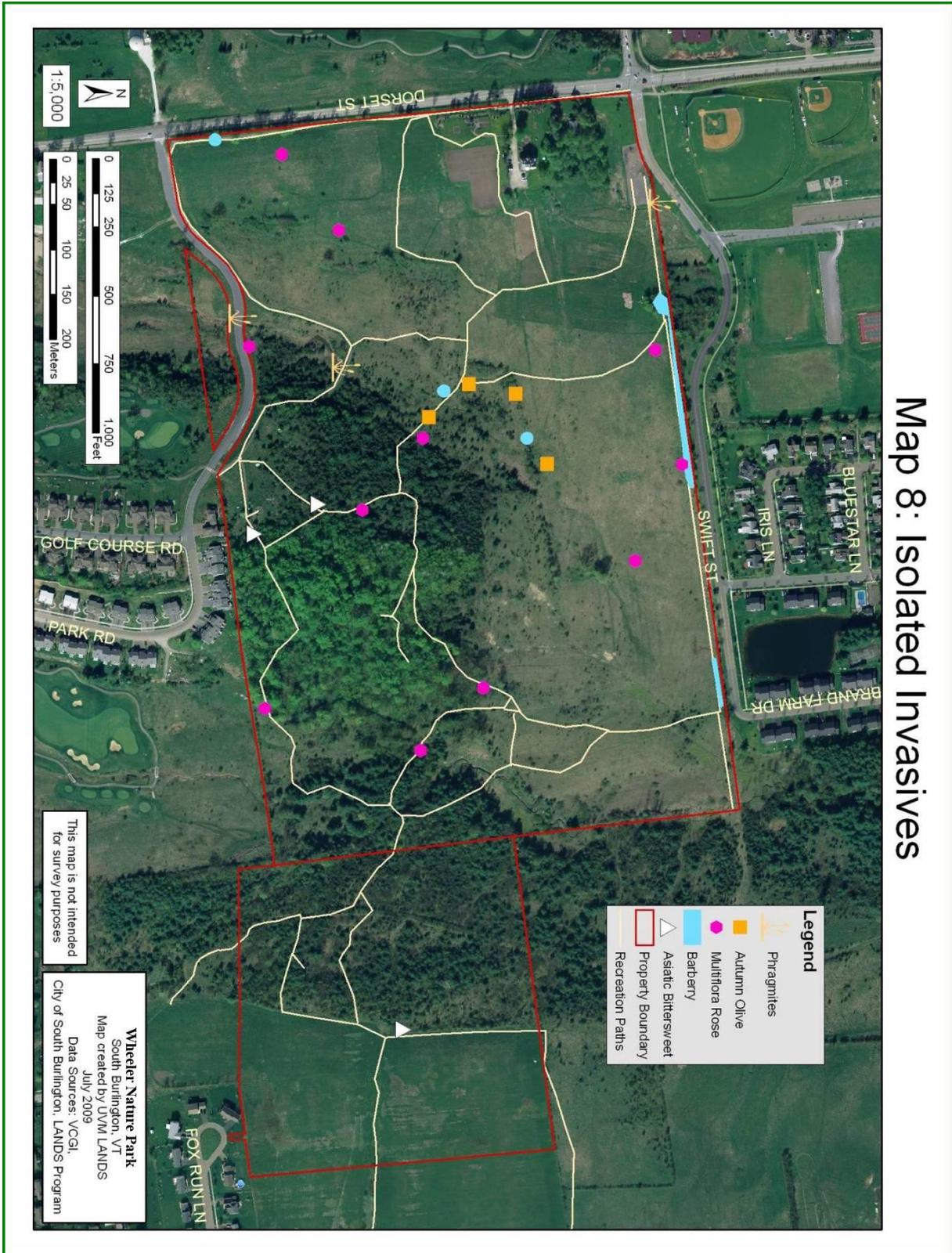
Map 6: Buckthorn Infestation



Map 7: Honeysuckle Infestation



Map 8: Isolated Invasives



Map 9: Mature Mast Trees

